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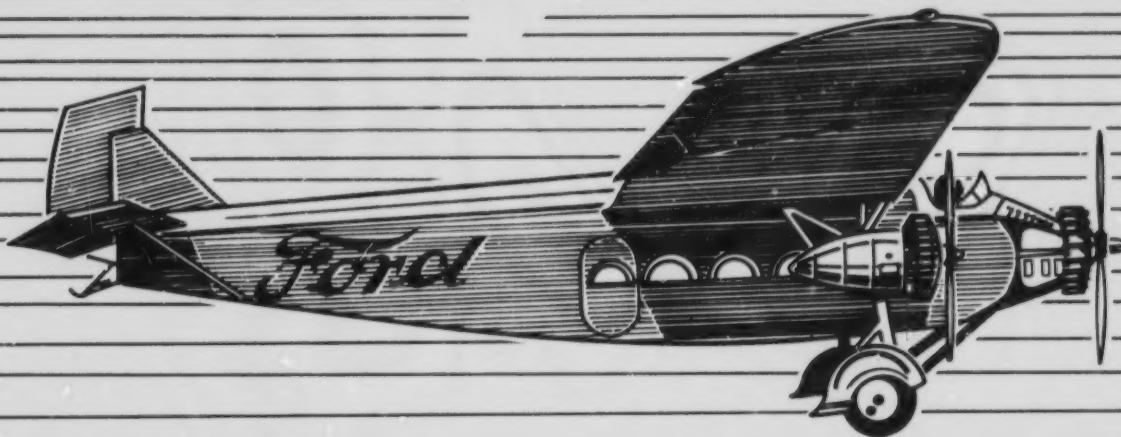
U.S. Department
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**Federal Aviation
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February 1986

FAA AVIATION FORECASTS

Fiscal Years 1986-1997

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16. Abstract This report contains the Fiscal Years 1986-1997 Federal Aviation Administration (FAA) forecasts of aviation activity at FAA facilities. These include airports with FAA control towers, air route traffic control centers, and flight service stations. Detailed forecasts were made for the four major users of the national aviation system: air carriers, air taxi/commuters, general aviation and the military. The forecasts have been prepared to meet the budget and planning needs of the constituent units of the FAA and to provide information that can be used by state and local authorities, by the aviation industry and the general public. The overall outlook for the forecast period is for strong economic growth, relatively stable real fuel prices, and moderate inflation. Based upon these assumptions, aviation activity is forecast to increase by Fiscal Year 1997 by 46 percent at towered airports (commuters, 62 percent; air carrier, 35 percent; general aviation, 49 percent; military, 0 percent), 39 percent at air route traffic control centers (commuters, 96 percent; air carriers, 37 percent; general aviation, 31 percent; military, 0 percent), and 37 percent in flight services performed. Hours flown by general aviation is forecast to increase 36 percent and helicopter hours flown 67 percent. Scheduled domestic revenue passenger miles (RPM's) are forecast to increase 80 percent, with scheduled international RPM's forecast to increase by 85 percent and commuter RPM's forecast to increase by 172 percent.			
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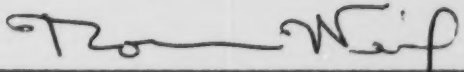
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PREFACE

The Federal Aviation Administration forecasts of aviation activity and other selected statistics are developed annually for use in the Agency's planning and decisionmaking. Aviation activity under the control of FAA towered airports, Air Route Traffic Control Centers, and the services provided by the Flight Service Stations are forecast for the several user groups--commercial air carriers, commuters/air taxis, general aviation, and the military.

For the period 1986-91, FAA aviation forecasts utilized projections of key economic variables provided by the Executive Office of the President, Office of Management and Budget. For the period 1992-97, FAA aviation forecasts were based on consensus growth rates of key economic variables provided by Chase Econometrics, Data Resources, Inc., Evans Economics, Inc. and Wharton Econometric Forecasting Associates. These projections are combined with projections of aviation variables and professional judgment on the probabilities and consequences of events that affect aviation. The combination is used as input to the econometric models from which the forecasts are generated.



Norman Weil, Deputy Director
Office of Aviation Policy and Plans

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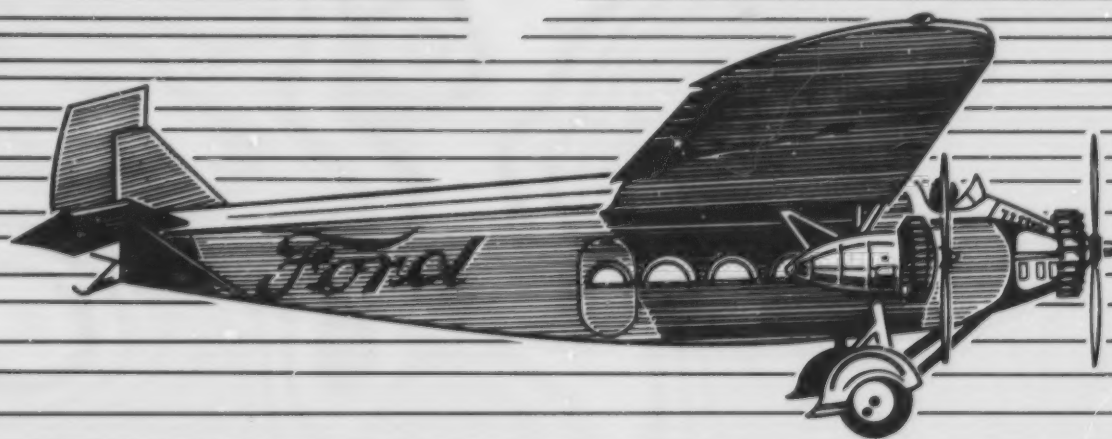
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CHAPTER I

EXECUTIVE SUMMARY



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Chapter I

Executive Summary

In the fall of 1973, the FAA completed a forecast covering fiscal years 1974-1985. That forecast received only a limited distribution within the FAA because of an unforeseen event, the Arab oil embargo. It was the first of several events that would dramatically alter the evolution of aviation. Deregulation, the air traffic controller's strike, and the worst U.S. recession since World War II were not considered in that forecast. The question then may be asked, What is the true value of forecasts ten to twelve years into uncertain future? The answer is relatively simple; we must always look ahead attempting to prepare for changes that inevitably occur in an industry as dynamic as aviation. The continuing growth projected in these forecasts, therefore, poses unique challenges for the FAA in accomplishing its statutory mission: "Service to the Nation by providing a safe and efficient aviation system which contributes to national security and the promotion of U.S. aviation."

There are structural changes occurring in the industry which can and do result in irregular growth patterns. However, the long-term outlook still appears to be one of strong growth, with aviation continuing to dominate all other transportation modes in the commercial intercity passenger market.

REVIEW OF 1985

Fiscal 1985 was a year in which we received mixed signals on the health and viability of the aviation industry. General aviation aircraft shipments declined for a seventh consecutive year; commuter airline traffic growth moderated, but was still strong; and commercial air carrier traffic and profits soared for a second straight year. In spite of a continued softness in general aviation operations, traffic continued to increase at FAA towers and at en route traffic control centers.

At the end of fiscal 1985, there were 57 commercial airlines engaged in scheduled domestic air service. Of this total, 19 were carriers that had been certificated prior to deregulation. In fiscal 1985, the 38 carriers certificated since deregulation accounted for 18 percent of domestic passenger enplanements and 22.2 percent of domestic departures. These numbers, in part, reflect the impact that deregulation has had on the commercial aviation industry.

After incurring operating losses totaling \$1.6 billion during the four-year period 1980 to 1983, U.S. certificated air carriers have recorded a \$2.0 billion operating profit for the last two consecutive years. The financial turnaround in 1984 and 1985 can be attributed to a number of factors: improved yield management, wage and productivity concessions from airline employees, and a fourth consecutive year of declining fuel costs.

Shipments of general aviation aircraft declined by 6.2 percent in fiscal 1985 to 2,227 units. This is the seventh consecutive year of decline from a peak of 17,811 units shipped in 1978. The failure of the general aviation industry to respond to the current economic recovery, one of the most robust of the postwar period presents a significant element of uncertainty to the forecast process. However, it is anticipated that, ultimately, the slowing of the expansion of the general aviation fleet will reduce the rate of growth of activity at FAA facilities.

ECONOMIC FORECASTS

The forecasts presented herein are based on improved models of general aviation and air carrier activities and on forecasts of economic variables as contained in the table below.

FAA FORECAST ECONOMIC ASSUMPTIONS
FISCAL YEARS 1986 - 1997

ECONOMIC VARIABLE	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1980	1984	1985	1986	1987	1997	80/85	84/85	85/86	86/87	85/97
Gross National Product (Billions 1972\$)	1,477.8	1,616.9	1,670.7	1,729.8	1,799.0	2,442.1	2.5	3.3	3.5	4.0	3.2
Consumer Price Index (1967=100)	239.8	304.9	315.9	326.4	339.7	511.8	5.7	3.6	3.3	4.1	4.1
Oil & Gas Deflator (1972=100)	322.4	341.7	342.9	332.0	317.8	462.9	1.2	0.4	(3.2)	(4.3)	2.5

Source: 1986-91 Executive Office of the President, Office of Management and Budget

1992-97 Consensus growth rate of Chase Econometrics, Data Resources, Inc., Evans Economics, Inc., and Wharton Econometric Forecasting Associates.

The overall outlook for the forecast period is for strong economic growth, relatively stable fuel prices, and moderate inflation. Reflecting the strong U.S. economy, aviation activity is expected to exhibit relatively strong growth throughout the forecast period. This growth is consistent with forecasted long-term economic growth. It should be recognized that in any given year there may be some perturbation from the long-term growth trend because none of the economic models are sufficiently precise to predict such turning points.

AVIATION ACTIVITY FORECASTS

Domestic air carrier revenue passenger miles are forecast to increase at an annual growth rate of 5.0 percent during the 1985-1997 time period. Domestic enplanements are forecast to increase by 4.7 percent annually during the same time period, a rate somewhat slower than passenger mile growth due to longer passenger trip lengths. Air carrier aircraft operations are forecast to increase at an annual rate of 2.5 percent over the forecast period. The high growth in revenue passenger miles and enplanements relative to operations reflects the baseline air carrier assumptions of higher load factors, larger seating capacity for air carrier aircraft, and longer passenger trip lengths.

In 1986, the regional/commuter airlines are expected to enplane 25.9 million passengers, 6.7 percent of all fare-paying passengers in scheduled domestic air service. By 1997, these carriers are expected to carry 54.5 million passengers and account for 8.4 percent of all domestic passenger enplanements. Commuter/regional carriers are expected to continue the trend toward purchase of small jet aircraft and larger propeller-driven aircraft.

AVIATION ACTIVITY FORECASTS
FISCAL YEARS 1986 - 1997

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1980	1984	1985	1986	1987	1997	80/85	84/85	85/86	86/87	85/97
<u>Air Carrier</u>											
Enplanements (Millions)											
Domestic	278.2	313.4	348.4	365.8	390.4	602.8	4.6	11.2	5.0	6.7	4.7
International	24.1	23.3	24.6	25.6	26.7	44.0	0.4	5.6	4.1	4.3	5.0
RPM's (Billions)											
Domestic	203.2	237.7	265.6	278.8	298.3	478.6	5.5	11.7	5.0	7.0	5.0
International	54.2	60.3	64.8	67.7	70.9	119.4	3.6	7.5	4.5	4.7	5.2
<u>Commuters/Regionals</u>											
Enplanements (Millions)	13.9	23.7	24.2	25.9	28.2	54.5	11.7	2.1	7.0	8.9	7.0
RPM's (Billions)	1.8	3.6	3.8	4.2	4.7	10.3	16.1	5.6	10.5	11.9	8.7
<u>Fleet</u>											
Air Carrier	2,394	2,745	2,938	3,031	3,137	3,976	4.2	7.0	3.2	3.5	2.6
Commuter	1,413	1,421	1,535	1,572	1,586	2,245	1.7	8.0	2.4	0.9	3.2
General Aviation (000)	210.3	213.3	220.9	216.5	218.7	259.8	1.0	3.6	(2.0)	1.0	1.4
<u>Hours Flown (Millions)</u>											
Air Carrier	6.5	7.2	7.4	7.7	8.1	11.0	2.6	2.8	4.1	5.2	3.4
General Aviation	41.6	35.9	36.6	37.3	38.1	49.6	(2.3)	2.0	1.9	2.1	2.6

Source: 1980-85 RSPA, FAA DATA

1986-97 FAA Forecast

Nationally, commuter/air taxi aircraft operations are expected to continue to increase at a faster rate than the other user categories--but not at the rates of the last several years. Replacement service in markets abandoned by large air carriers has just about run its course as a significant source of growth for the commuter/regional airlines. Future growth is expected to come from growth in existing markets and, to some degree, the development of new markets in smaller communities which show potential for supporting regularly scheduled service.

Increased business use of general aviation continue to be reflected in the changing character of the fleet. The more expensive and sophisticated turbine-powered part of the fixed wing fleet is expected to grow much faster than piston aircraft between 1985 and 1997. The total fleet, 77.8 percent single engine piston aircraft in 1985, will grow by only 12.4 percent during the forecast period. Fixed wing turbine-powered aircraft accounted for 4.6 percent of the fleet in 1985. By 1997, the percentage will increase to 6.4 percent.

FAA WORKLOAD FORECASTS

Aviation activity at FAA facilities is expected to continue the upward growth pattern which began in 1983. The demand for FAA operational services is anticipated to increase over the forecast period as a result of continued strong growth in aviation activity. Total aircraft operations at FAA towered airports are forecast to increase to 84.5 million in 1997, a 3.2 percent annual growth rate over the 57.9 million operations achieved in 1985.

FAA WORKLOAD MEASURES
FISCAL YEARS 1986 - 1997

WORKLOAD MEASURES (IN MILLIONS)	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1980	1984	1985	1986	1987	1997	80/85	84/85	85/86	86/87	85/97
Aircraft Operations											
Air Carrier	10.1	10.9	11.3	11.9	12.3	15.2	2.1	3.7	5.5	3.4	2.5
Air Taxi & Commuter	4.6	6.6	6.9	7.3	7.6	11.2	8.6	4.9	5.6	4.1	4.1
General Aviation	49.0	36.8	37.2	38.1	39.4	55.6	(4.4)	0.9	2.5	3.4	3.4
Military	2.5	2.5	2.5	2.5	2.5	2.5	0.5	3.8	0.0	0.0	0.0
Total	66.2	56.8	57.9	59.8	61.8	84.5	(2.4)	2.0	3.3	3.3	3.2
Instrument Operations											
Air Carrier	10.6	11.3	11.8	12.5	12.9	15.8	2.1	3.7	6.4	3.2	2.5
Air Taxi & Commuter	4.1	6.0	6.4	6.8	7.2	11.0	9.1	6.6	6.5	5.9	4.6
General Aviation	19.3	16.0	16.4	17.2	18.1	22.9	(2.8)	2.6	4.8	5.2	2.8
Military	4.1	4.0	4.1	4.1	4.1	4.1	0.1	4.0	0.0	0.0	0.0
Total	38.2	37.3	38.7	40.6	42.3	53.8	0.3	3.7	4.9	4.2	2.8
IFR Aircraft Handled											
Air Carrier	13.9	14.1	14.6	15.4	15.9	20.0	1.1	3.7	5.3	3.3	2.7
Air Taxi & Commuter	2.6	4.4	4.8	5.1	5.5	9.4	13.3	9.8	6.4	7.8	5.8
General Aviation	8.9	8.3	8.3	8.5	8.7	10.9	(1.2)	0.8	2.0	2.4	2.3
Military	4.7	4.9	5.0	5.0	5.0	5.0	1.0	1.8	0.0	0.0	0.0
Total	30.1	31.6	32.7	34.0	35.1	45.3	1.7	3.5	3.9	3.2	2.8
Flight Services											
Pilot Briefs	18.3	15.1	14.6	15.1	15.6	20.2	(3.8)	(3.6)	3.6	3.3	2.8
Flight Plans Originated	9.0	8.2	8.0	8.3	8.7	11.7	(2.1)	(2.3)	3.9	4.8	3.2
Aircraft Contacted	9.6	8.2	7.7	7.8	7.9	8.6	(3.6)	(4.8)	0.8	1.3	0.9
Total	64.2	54.7	52.9	54.6	56.5	72.4	(3.3)	(3.4)	3.3	3.5	2.7

Source: FY 1980-85 FAA Data

FY 1986-97 FAA Forecasts

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The increased use of avionics by regional/commuter airlines and general aviation is expected to contribute most of the growth in instrument operations at FAA towered airports. Instrument operations are forecast to increase from 38.7 million operations in 1985 to 53.8 million in 1997, a 2.8 percent annual growth rate.

The workload at the Air Route Traffic Control Centers is forecast to increase at a 2.8 percent average annual rate between 1985 and 1997. The increased demand will come primarily from commercial air carriers and commuter/regional airlines. Commuter/regional aircraft handled at the Centers are projected to almost double over the next 12 years.

In summary, aviation activity is expected to continue the upturn begun in fiscal 1983 and to grow at about the same rate as the general economy. Aviation will continue to dominate all other transportation modes in the commercial intercity passenger market. Commuter/regional airline operations and business use of general aviation are expected to experience greater growth than the larger established airlines and personal use of general aviation.

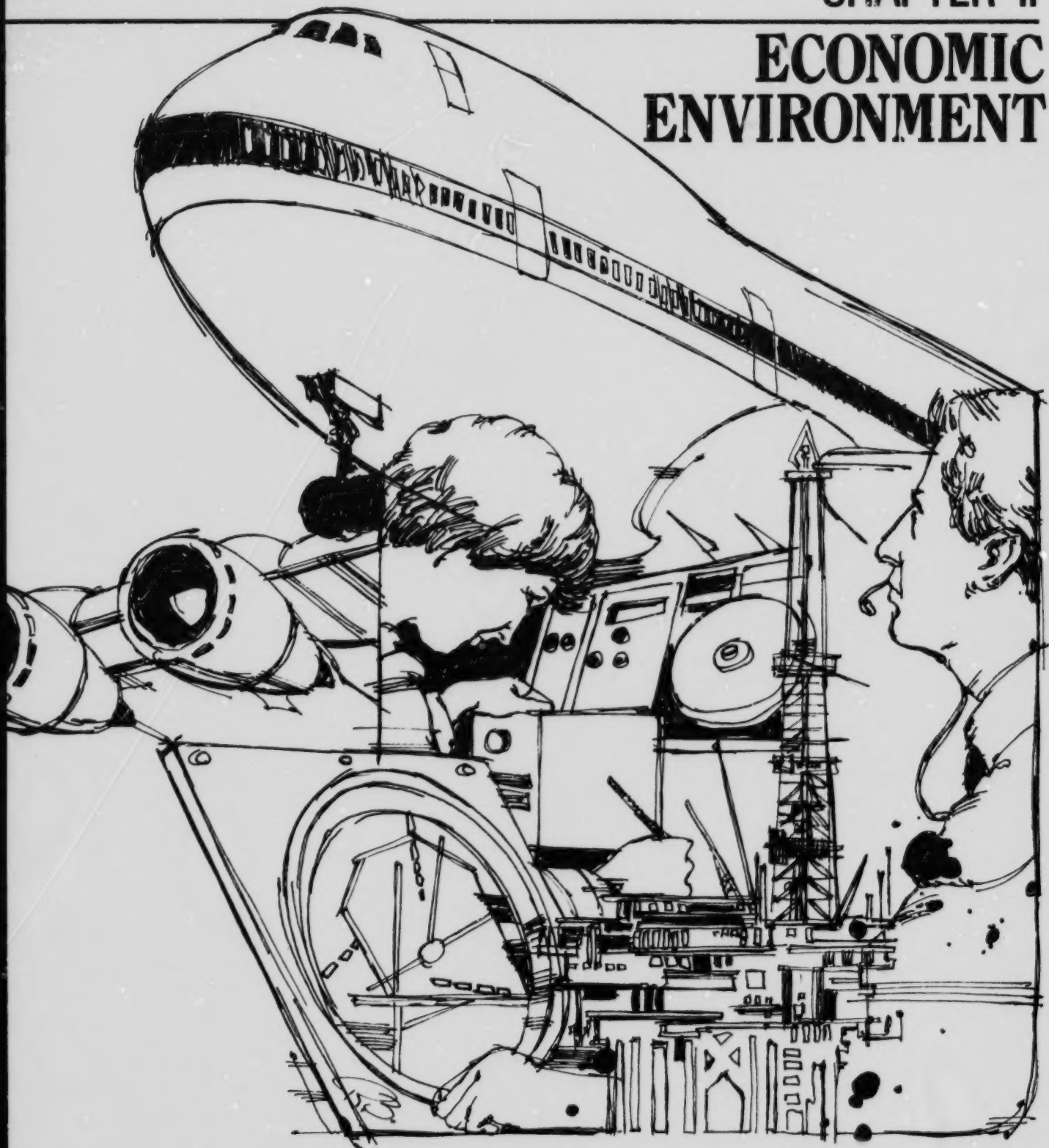
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CHAPTER II

ECONOMIC ENVIRONMENT



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Chapter II

Economic Environment

REVIEW OF 1985

The current economic expansion, which began in 1983, is comparable to some of the most robust recoveries of the post-war period. This recovery has been characterized by a favorable mix of rising output, declining inflation, and falling energy prices. In fiscal 1985, the third full-year of economic expansion, gross national product (GNP) rose \$242 billion, or 6.5 percent. Gross national product, adjusted for price changes, rose 3.3 percent. Consumer prices continue to increase at relatively low rates, which indicates that inflation is under control. The consumer price index for all urban consumers rose only 3.3 percent in fiscal 1985. Increasing supplies of oil accompanied by reduced demand, due to conservation and the development of alternative sources of energy, continue to exert downward pressure on fuel prices. The oil and gas deflator declined 1.5 percent in fiscal 1984 and increased by only 0.4 percent in fiscal 1985.

Economic growth should continue through 1986. Inflation is expected to remain in the moderate range as 'real' fuel prices continue to fall. Declining fuel prices, low inflation rates, and an expanding economy will all contribute to a continuation of the upturn in aviation activity begun in 1983.

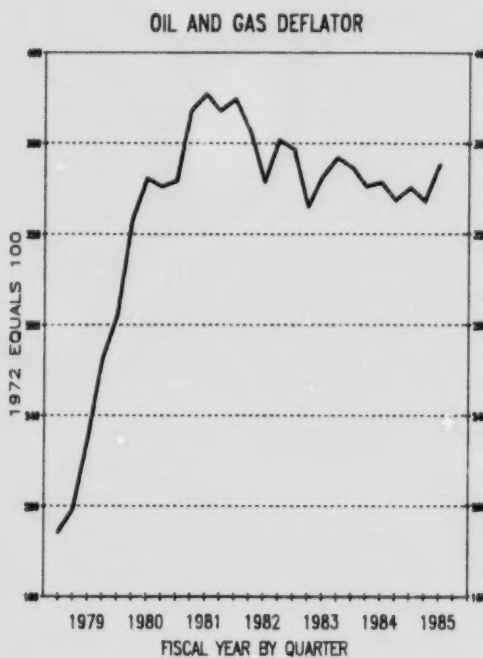
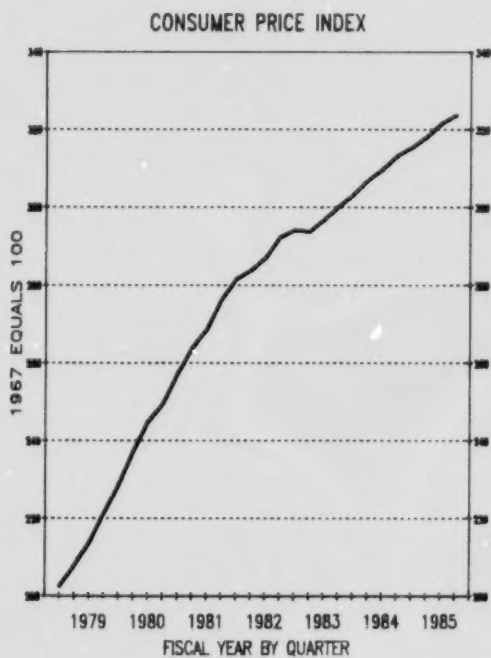
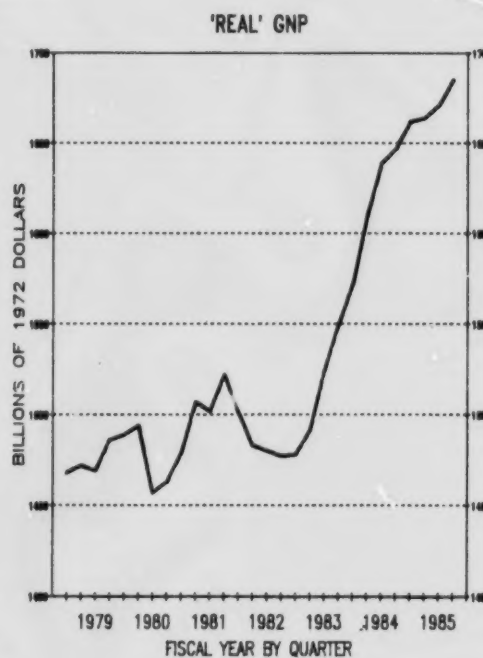
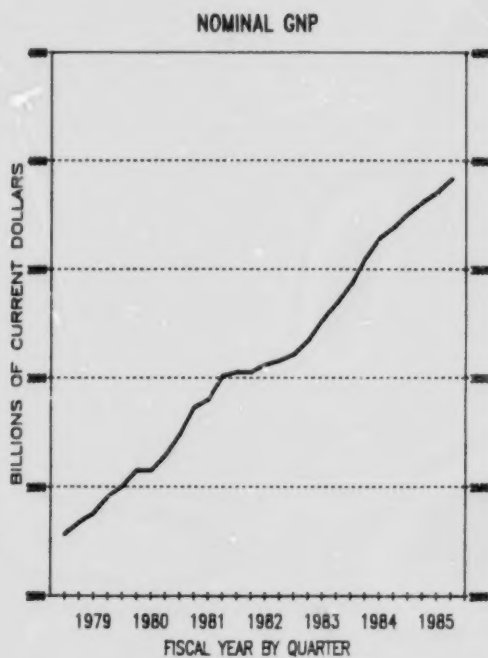
FORECAST ASSUMPTIONS

The economic scenario utilized in developing the FAA Baseline Aviation Forecasts for the period 1986-1991 was provided by the Executive Office of the President, Office of Management and Budget. For the period 1991-97, the economic scenario utilized consensus growth rates of the economic variables prepared by Chase Econometrics, Data Resources, Inc., Evans Economics, Inc., and Wharton Econometric Forecasting Associates. The data are presented in tabular form in Chapter IX. The principal series used in preparing the forecasts are presented here. Specific assumptions used in the individual models are discussed in the appropriate following chapters.

ECONOMIC FORECASTS

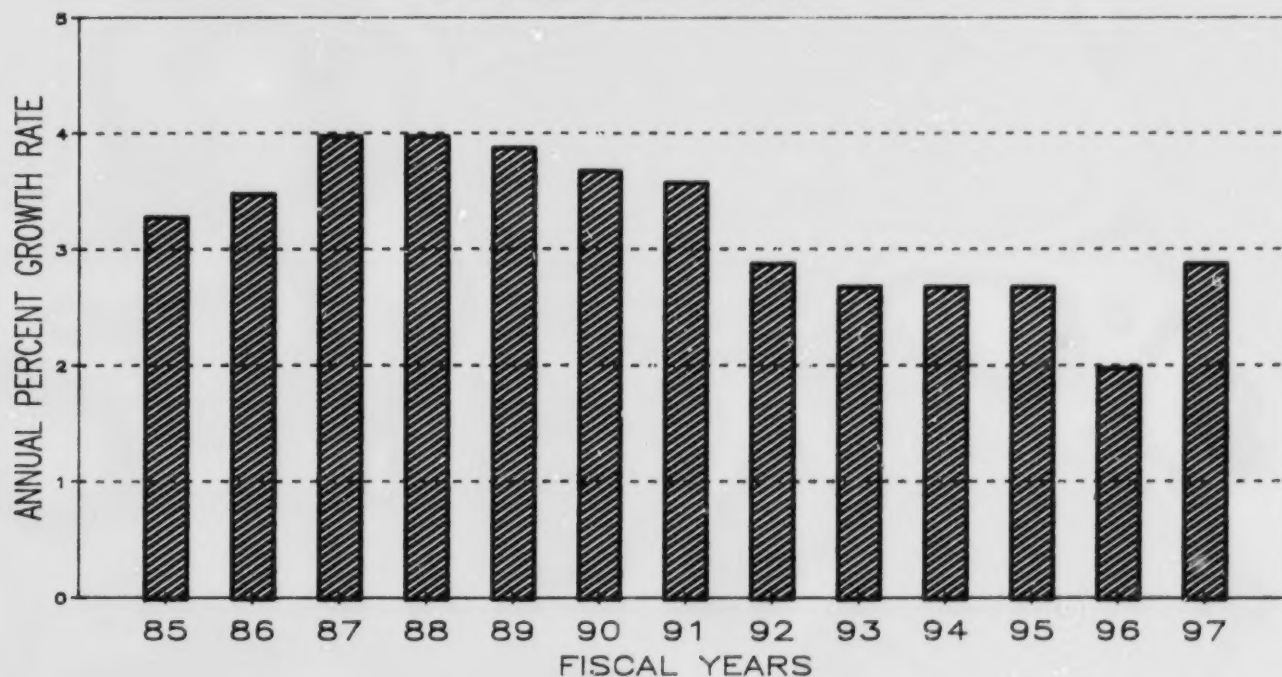
Gross national product, adjusted for price changes, is expected to grow at an annual rate of 3.2 percent throughout the forecast period. In the short term economic expansion is forecast to continue, with 'real' GNP increasing by 3.5 percent in fiscal 1986 and 4.0 percent in both fiscal 1987 and 1988.

ECONOMIC TRENDS

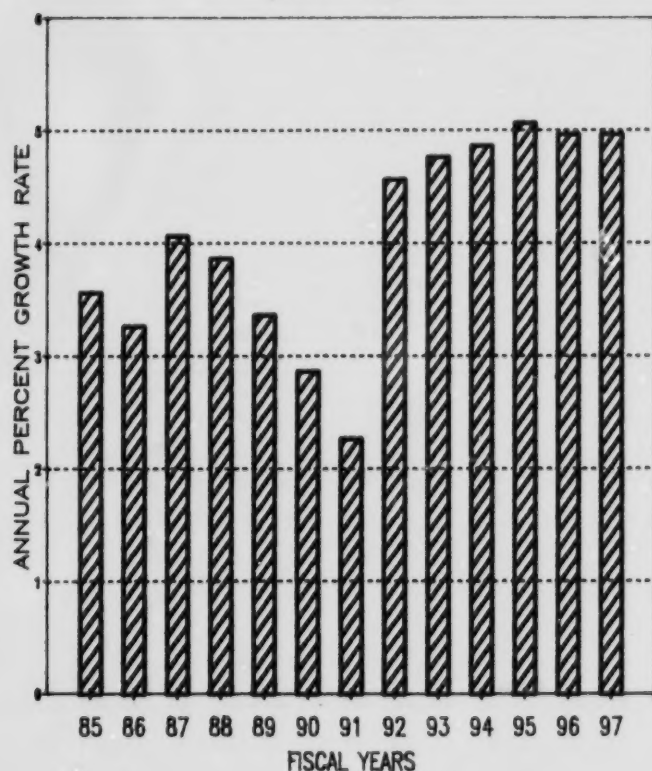


FORECASTS OF ECONOMIC VARIABLES

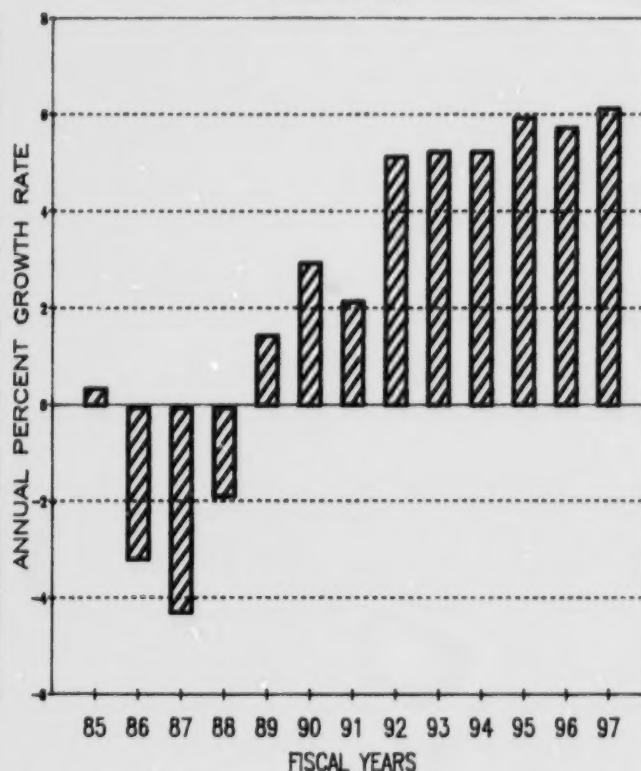
GROSS NATIONAL PRODUCT (1972 DOLLARS)



CONSUMER PRICE INDEX (1967 = 100)



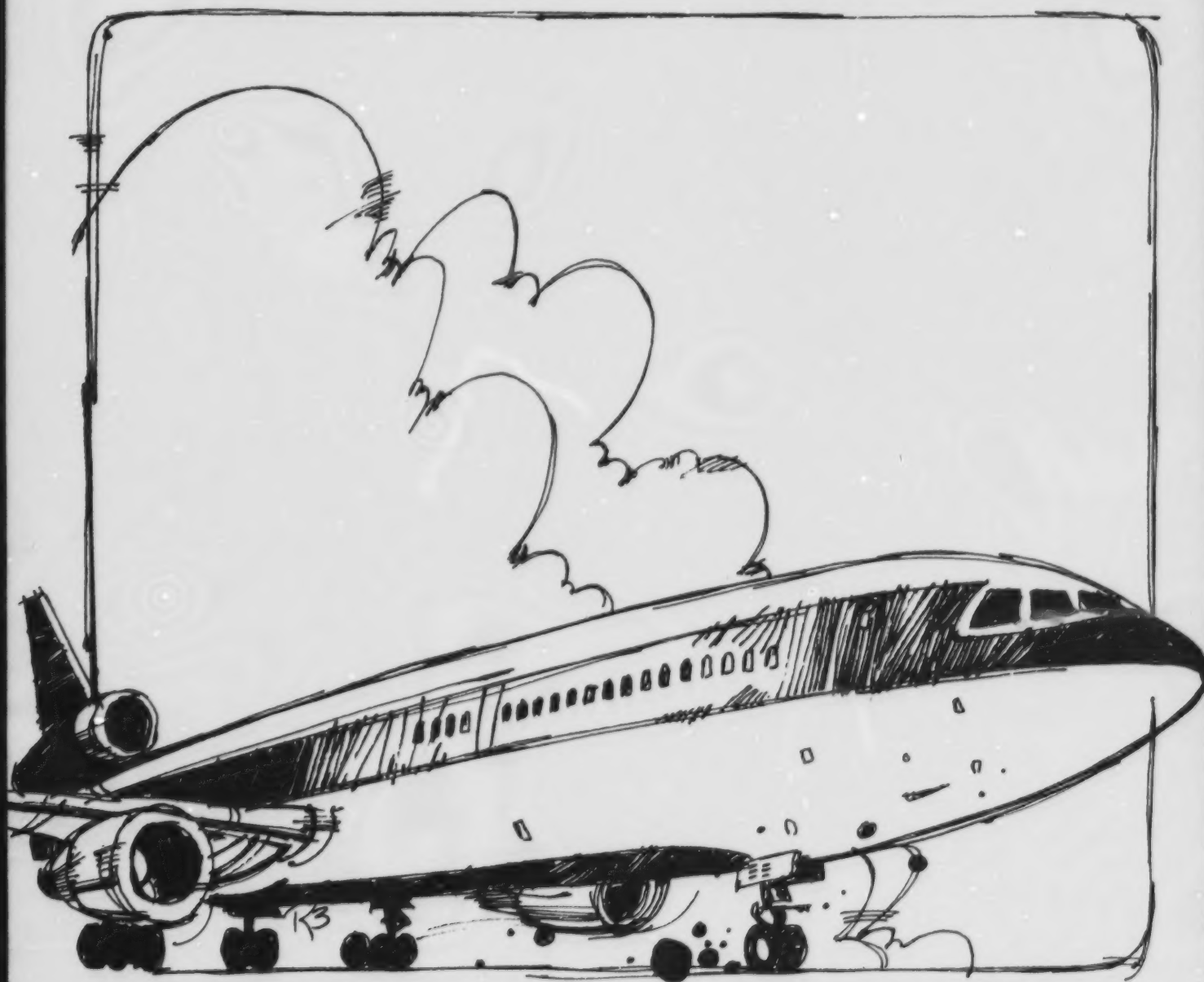
OIL AND GAS DEFLATOR (1972 = 100)



Consumer prices are expected to remain in the moderate range, increasing by an average annual rate of 4.1 percent over the forecast period. Inflation is forecast to increase by only 3.3 percent in fiscal 1986 and 4.1 percent in fiscal 1987. Fuel prices are expected to decline for the next three years--3.2 percent in fiscal 1986, 4.3 percent in fiscal 1987, and 1.9 percent in fiscal 1988. Over the entire forecast period, fuel prices are predicted to increase at an annual rate of only 2.5 percent, considerably less than the forecast of the average annual inflation rate.

CHAPTER III

COMMERCIAL AIR CARRIERS



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Chapter III

Commercial Air Carriers

As of November 1985, there were approximately 92 commercial passenger and cargo air carriers reporting traffic and financial data on Form 41 to the Research and Special Programs Administration (RSPA), Department of Transportation. Of this total, 60 were engaged in providing scheduled passenger air service and represent the data base on which these air carrier forecasts are formulated. A listing of active and inactive commercial passenger and cargo airlines can be found in Appendices A and B.

REVIEW OF 1985

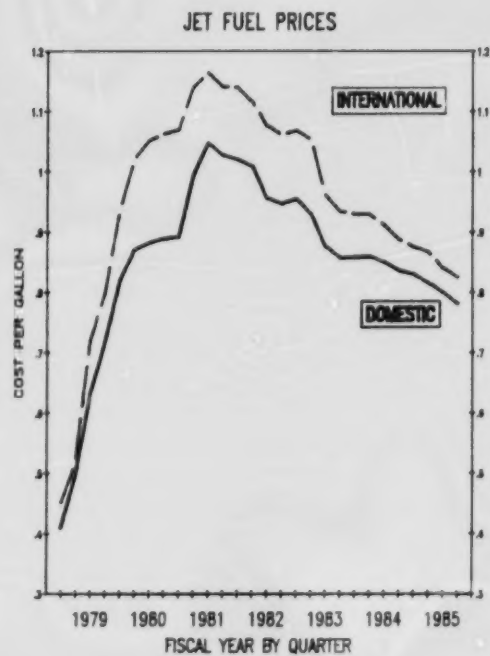
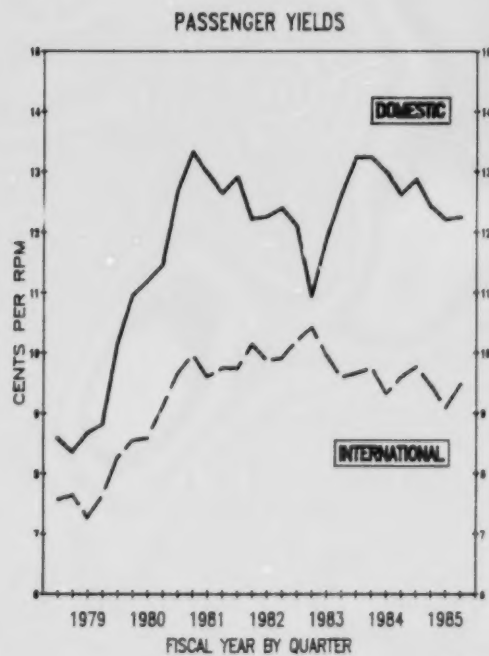
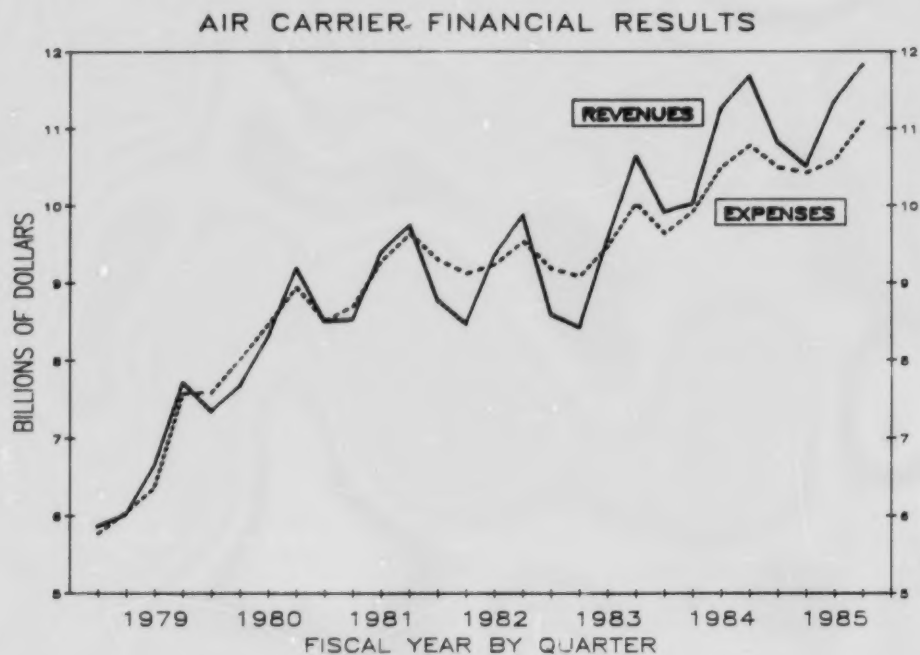
Financial Results

After incurring operating losses totaling almost \$1.6 billion during the four-year period between 1980 and 1983, U.S. certificated air carriers have recorded a \$2.0 billion annual operating profit for the last two successive years. In fact, fourth quarter FY-85 marked the tenth consecutive profitable quarter for the industry, a period during which the industry has earned operating profits of almost \$5.0 billion. Although the industry's debt structure continued to erode a large part of the operating profits, the industry still managed to post a net profit of almost \$900 million in fiscal 1985; \$1.7 billion over the past two-years.

The financial turnaround begun in mid-1983 can be attributed to a number of factors. On the revenue side, improved yield management has helped to eliminate the destructive fare wars that were so prevalent throughout 1982 and much of 1983. Although the American Airline discount-fare program, begun in early 1985 and copied by most carriers, did reduce yields in fiscal 1985, the discount fares were utilized to stimulate traffic demand without totally eliminating profit margins. However, despite an increase of almost 11.0 percent in passenger traffic, operating revenues increased by only 8.2 percent. Domestic yields declined by 5.0 percent in 1985 while international yields declined by 2.7 percent.

On the expense side, two factors -- wage and productivity concessions from airline employees and a fourth consecutive year of declining jet fuel prices -- combined to hold the increase in operating expenses to 8.7 percent in fiscal 1985, slightly less than the increase in the number of seat miles flown. In fiscal 1985, the average price paid for a gallon of jet fuel declined by 5.5 percent, 5.2 percent in domestic markets, and 7.0 percent in international markets.

U.S. AIR CARRIER REVENUE AND COST TRENDS



Despite the record profits earned over the past two years, there continues to be cause for concern within the industry. In fiscal 1985, twelve carriers reported operating losses; 19 carriers either filed for bankruptcy, ceased operations, or both; and three carriers -- American, Delta, and Eastern -- earned operating profits of almost \$1.2 billion, 60 percent of the total industry profits. In addition, weak traffic demand during the first quarter of fiscal 1986 has raised fears of a return to the destructive fare wars that eroded profit margins in 1982-83. There is also the distinct possibility that jet fuel prices could increase by 5 to 10 percent during the winter months as jet fuel competes with home heating fuels for its share of the crude oil barrel. This will put additional pressure on those carriers with weak balance sheets. In summary, the above points highlight the fact that tremendous differences continue to exist among the individual carriers with regard to their financial condition and continued existence.

Scheduled Domestic Passenger Traffic and Capacity

Despite a slowdown in U.S. economic growth and a strike at the largest domestic airline during the peak summer season, domestic passenger traffic on U.S. scheduled commercial air carriers increased for a fourth consecutive year in fiscal 1985. Revenue passenger miles increased by 11.7 percent and passenger enplanements by 11.2 percent, the largest single-year growth since 1979, the first full year of deregulation. Declining passenger yields were largely responsible for the large increase in domestic passenger demand.

Available seat miles flown by U.S. scheduled air carriers in domestic service increased by only 5.9 percent in fiscal 1985, resulting in a load factor of 60.9 percent, the highest since 1979. However, the strikes at Pan American and United Airlines reduced the number of available seat miles flown, thereby inflating the load factor.

Scheduled International Passenger Traffic and Capacity

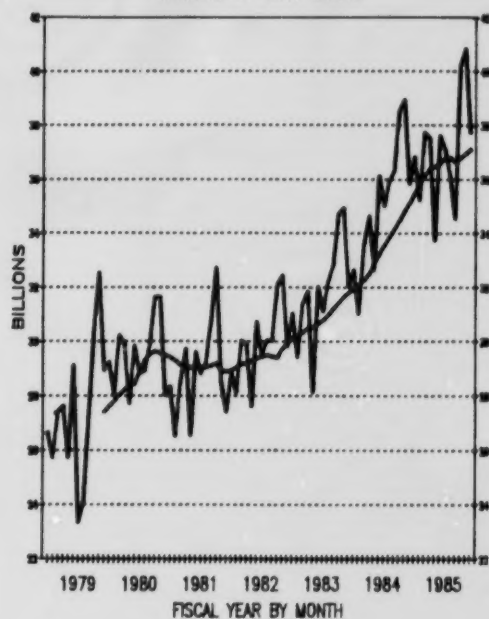
In international markets, the combination of a strong U.S. dollar abroad and declining passenger yields led to an increase of 7.5 percent in revenue passenger miles and an increase of 5.6 percent in passenger enplanements in fiscal 1985. Available seat miles increased by 8.1 percent during this same time period, resulting in a load factor of 65.8 percent, slightly below the load factor achieved in 1984.

The largest increases in international traffic occurred in the Atlantic and Pacific markets, which increased by 14.3 percent and 6.5 percent, respectively. Traffic on Latin American routes declined by 3.2 percent in fiscal 1985. Load factors achieved by each of the three international entities were: Atlantic markets, 67.0 percent; Pacific markets, 66.5 percent; and Latin American markets, 60.3 percent.

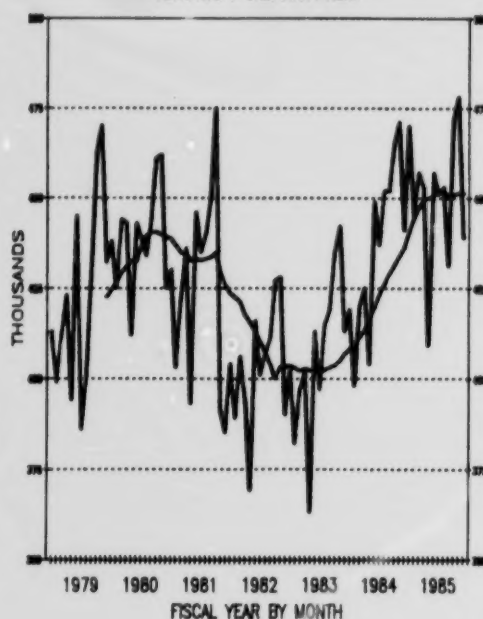
U.S. AIR CARRIER CAPACITY AND TRAFFIC TRENDS

DOMESTIC OPERATIONS

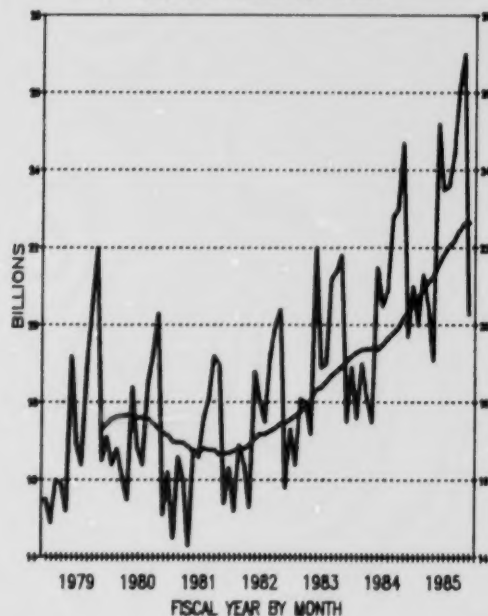
AVAILABLE SEAT MILES



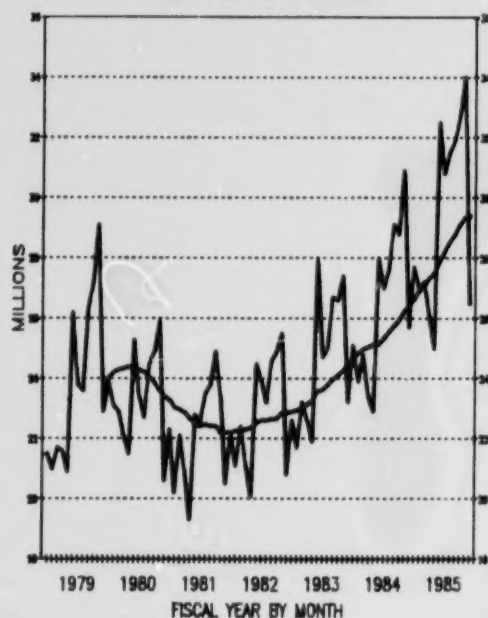
AIRCRAFT DEPARTURES



REVENUE PASSENGER MILES



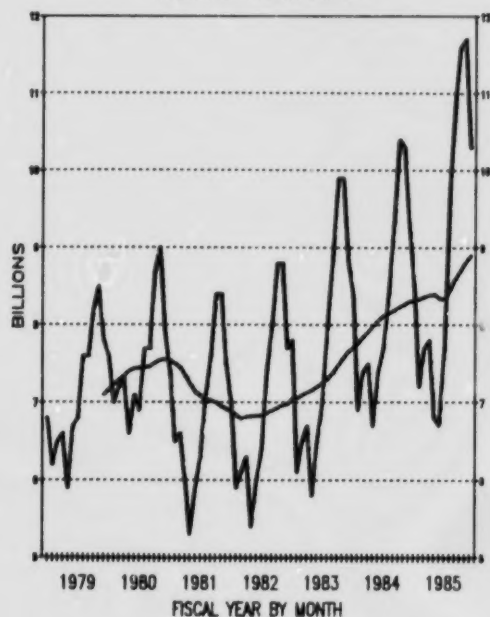
PASSENGER ENPLANEMENTS



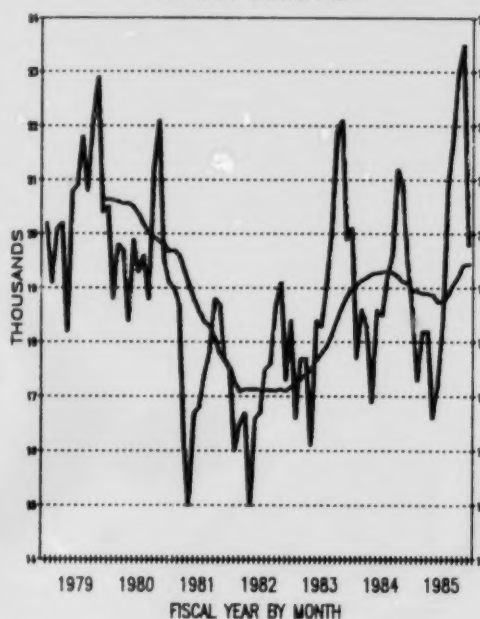
U.S. AIR CARRIER CAPACITY AND TRAFFIC TRENDS

INTERNATIONAL OPERATIONS

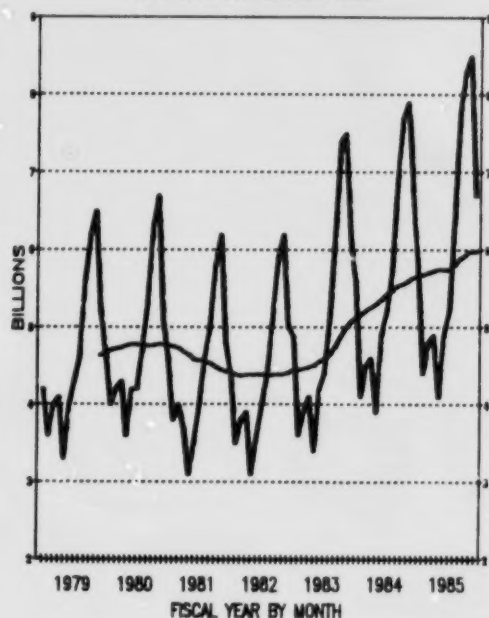
AVAILABLE SEAT MILES



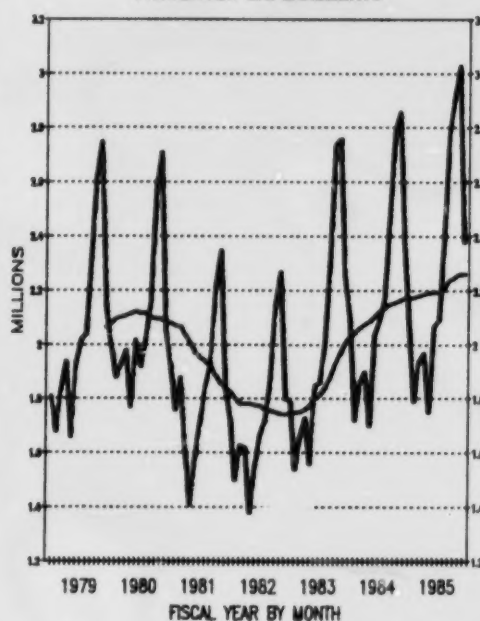
AIRCRAFT DEPARTURES



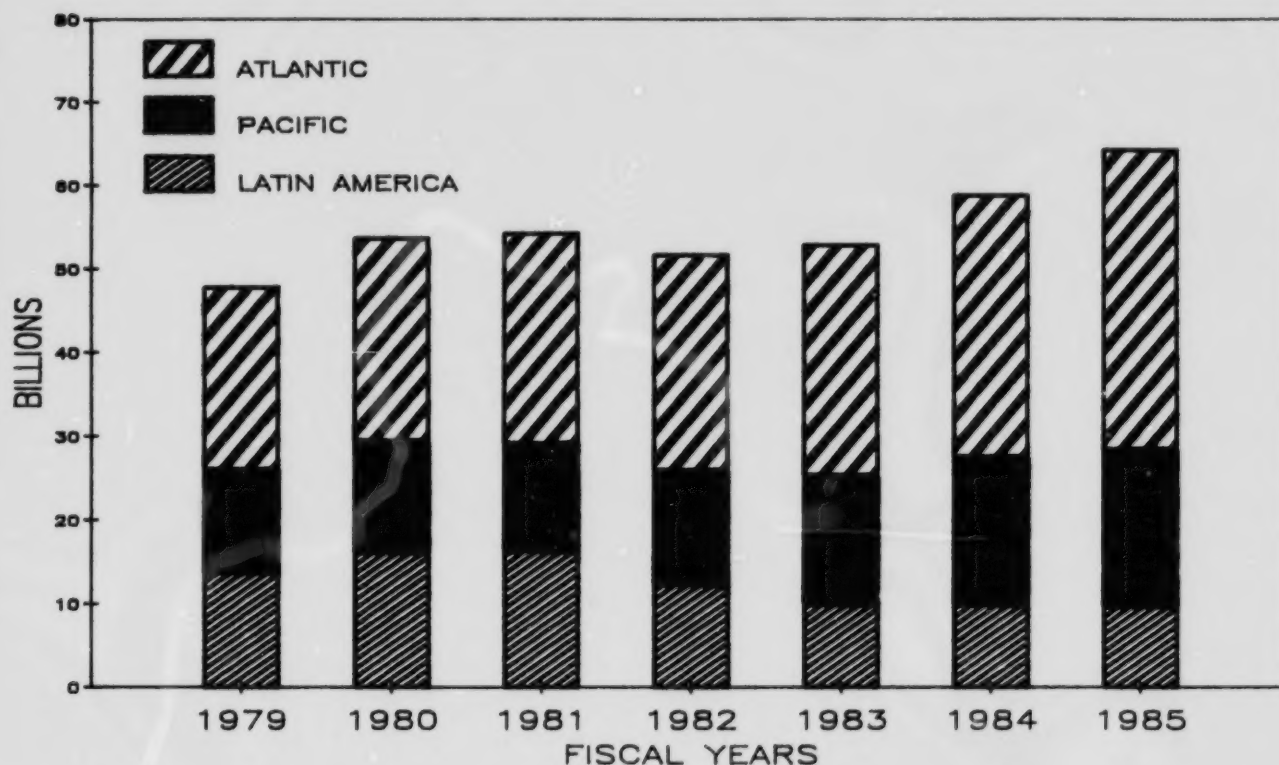
REVENUE PASSENGER MILES



PASSENGER ENPLANEMENTS



INTERNATIONAL RPMS BY ENTITY



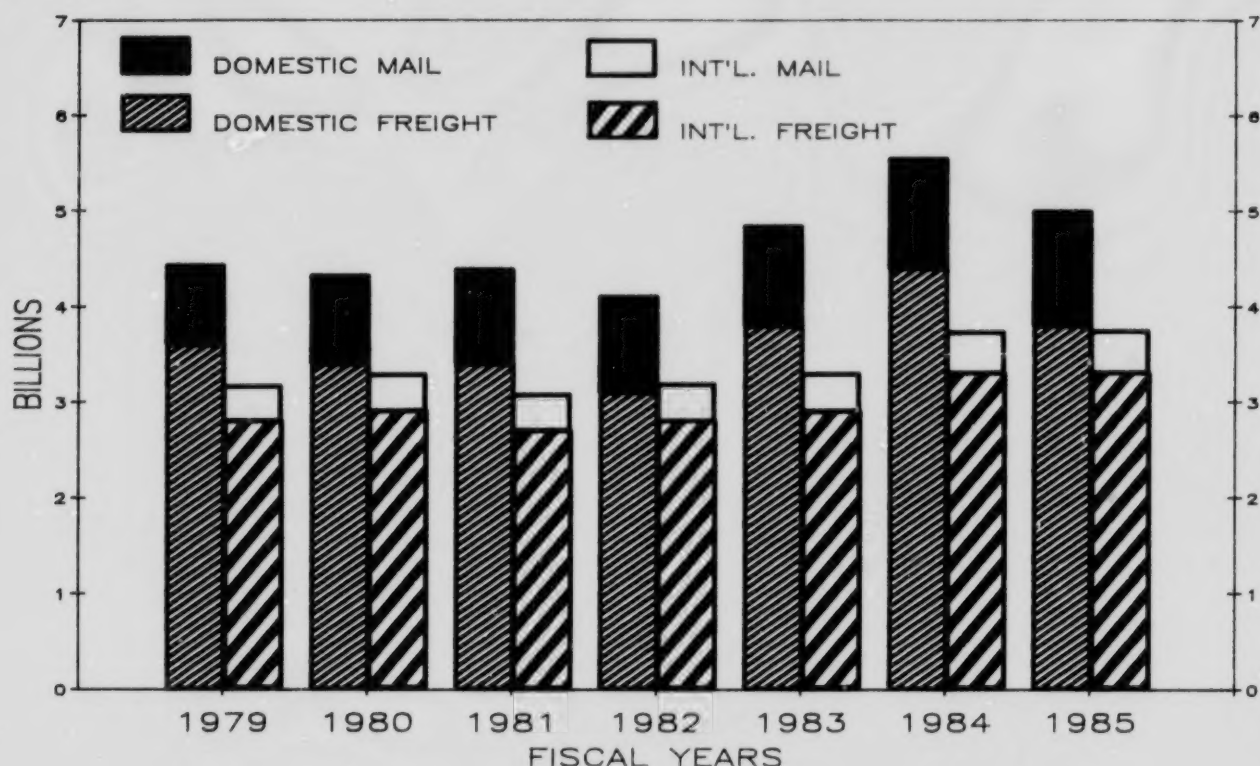
Nonscheduled Traffic and Capacity

The number of nonscheduled passengers flying on U.S. commercial air carriers totaled 7.7 million in fiscal 1985, 15.2 percent above the same 1984 period. However, because of a shift in the mix of international and domestic passengers, nonscheduled revenue passenger miles increased only 1.7 percent in fiscal 1985 to 14.0 billion. International enplanements declined 6.5 percent to 2.7 million while domestic enplanements increased 30.2 percent to 5.0 million. A load factor of 79.6 percent was achieved on nonscheduled flights, 86.0 percent on international routes, and 74.2 percent on domestic routes.

Air Cargo Traffic

The number of cargo revenue ton miles flown by U.S. air carriers reporting on RSPA Form 41 totaled 8.8 billion in fiscal 1985, a decline of 5.1 percent from 1984. This included a 7.0 percent decline in freight/express ton miles and a 3.9 percent increase in mail ton miles. Freight/express ton miles declined by 12.4 percent in domestic markets but increased by 0.2 percent in international markets. Mail ton miles increased by 4.9 percent in domestic markets but by only 1.4 percent in international markets.

AIR CARGO REVENUE TON MILES



While the slowdown in the U.S. economy is partially responsible for the decline in the demand for air cargo services, one other possible explanation for the decline lies in the fact that both United and American Airlines got rid of their freighters during the past year. Although these aircraft are still utilized in cargo service by other air carriers, most of the aircraft were purchased by small package carriers who do not report to RSPA. For the 12 months ending June 1985, these small package carriers (18 carriers, excluding United Parcel Service) reported a total of 176.6 million packages carried, a 27.5 percent increase over the comparable 12-month period ending in June 1984. No data is available on the weight of these shipments.

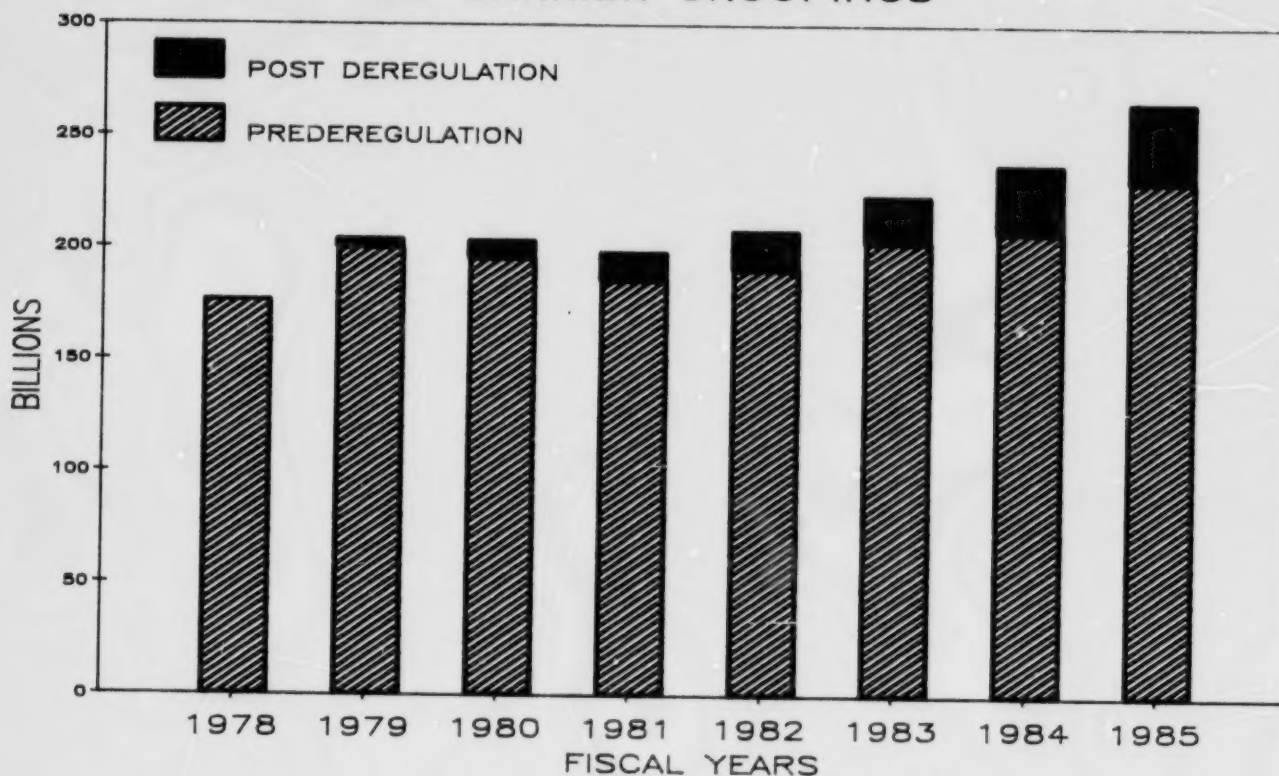
INDUSTRY COMPOSITION

At the end of fiscal 1985 there were 57 commercial air carriers engaged in scheduled domestic passenger service. Of this total, 19 were carriers that had been certificated prior to deregulation (prederegulation carriers), and 38 were carriers that had been certificated since deregulation (post deregulation carriers). Carriers are designated by RSPA as either Majors, Nationals, Large Regionals, or Medium Regionals; the carrier designation based upon annual operating revenues. A listing of carriers and their designation can be found in Appendix A.

As carriers grow or shrink in size, they move from one carrier designation to another and, as such, comparisons between the various carrier groupings become rather meaningless. In fiscal 1985, Piedmont moved from National to Major carrier designation and Southwest moved from Large Regional to National carrier designation. Based upon projected 1985 revenues, People Express, who only began service in May 1981, is expected to be designated a Major carrier. Air Wisconsin, America West, and Jet America are expected to move from Large Regional to National carrier designation.

The composition of the domestic air carrier industry has changed markedly in the seven years since deregulation. During this period, those carriers certificated since deregulation have grown to such an extent that they accounted for 13.2 percent of all domestic revenue passenger miles in fiscal 1985. While total domestic passenger miles have increased at an average annual rate of 4.5 percent since 1979, the post deregulation carriers have averaged over 47 percent compared to an average of only 2.4 percent for the prederegulation carriers. However, there is reason to believe that the older established carriers have finally learned how to compete more successfully with the new low-cost carriers. In fiscal 1985, the older established carriers recorded an increase of 11.0 percent in revenue passenger miles, compared with 16.7 percent for the post deregulation carriers. This resulted in a share loss of only 0.6 points, the smallest share loss in any one year since deregulation began in 1978.

SCHEDULED DOMESTIC RPM'S BY CARRIER GROUPINGS



The changes in industry composition are even more dramatic when one looks at passenger enplanements. In fiscal 1985, the post deregulation carriers accounted for 18.0 percent of all domestic passenger enplanements, having increased at an average annual rate of almost 34.0 percent between 1979 and 1985. During this same time period, total domestic enplanements increased at an annual growth rate of 3.5 percent while the prederegulation carriers' enplanements grew by only 0.8 percent. However, as was the case with passenger miles, the share loss in fiscal 1985 was only minimal. Passenger enplanements of prederegulated carriers increased by 10.2 percent in 1985, compared to a 16.0 percent increase for the post deregulation carriers.

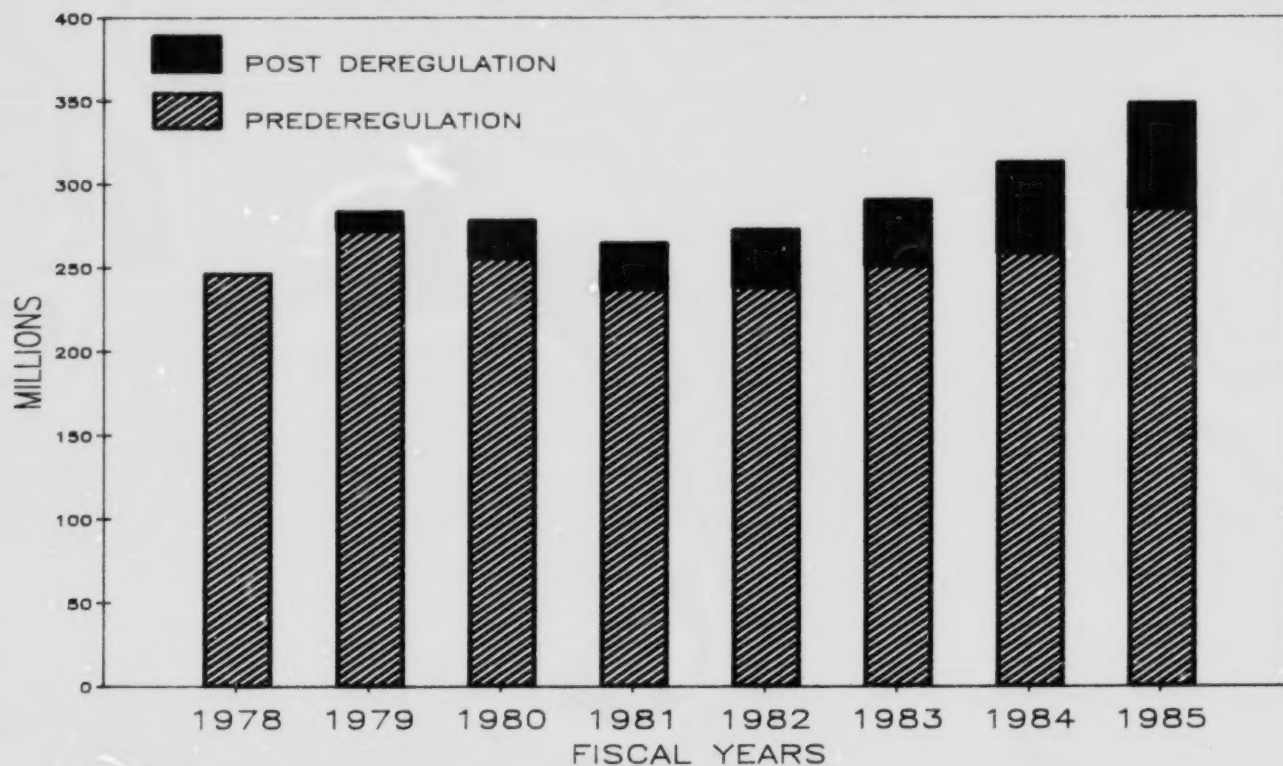
In fiscal 1985, domestic carriers performed 5.3 million departures, a 13.3 percent increase over the number of departures performed in fiscal 1978. However, all of this growth is the result of increased activity by the post deregulation carriers. The prederegulation carriers performed 557,000 fewer departures (11.8 percent) in fiscal 1985 than in 1978. The number of departures performed by post deregulation carriers totaled almost 1.2 million in 1985; 22.2 percent of all domestic departures.

The past seven-years have also witnessed changes in the average passenger trip length, as well as in the average size of the aircraft operated by domestic carriers. In fiscal 1985, the average passenger trip length for the prederegulation carriers was 808 miles, 91 miles longer than the average trip length recorded in 1978. The average trip length of post deregulation carriers was 556 miles in 1985, compared with an average trip length of only 310 miles in 1979. However, the average trip length for both groupings appears to have stabilized somewhat. The prederegulation carriers' average trip length has actually declined by 1 mile since 1983, while the post deregulation carriers' average trip length increased by only 3 miles in 1985.

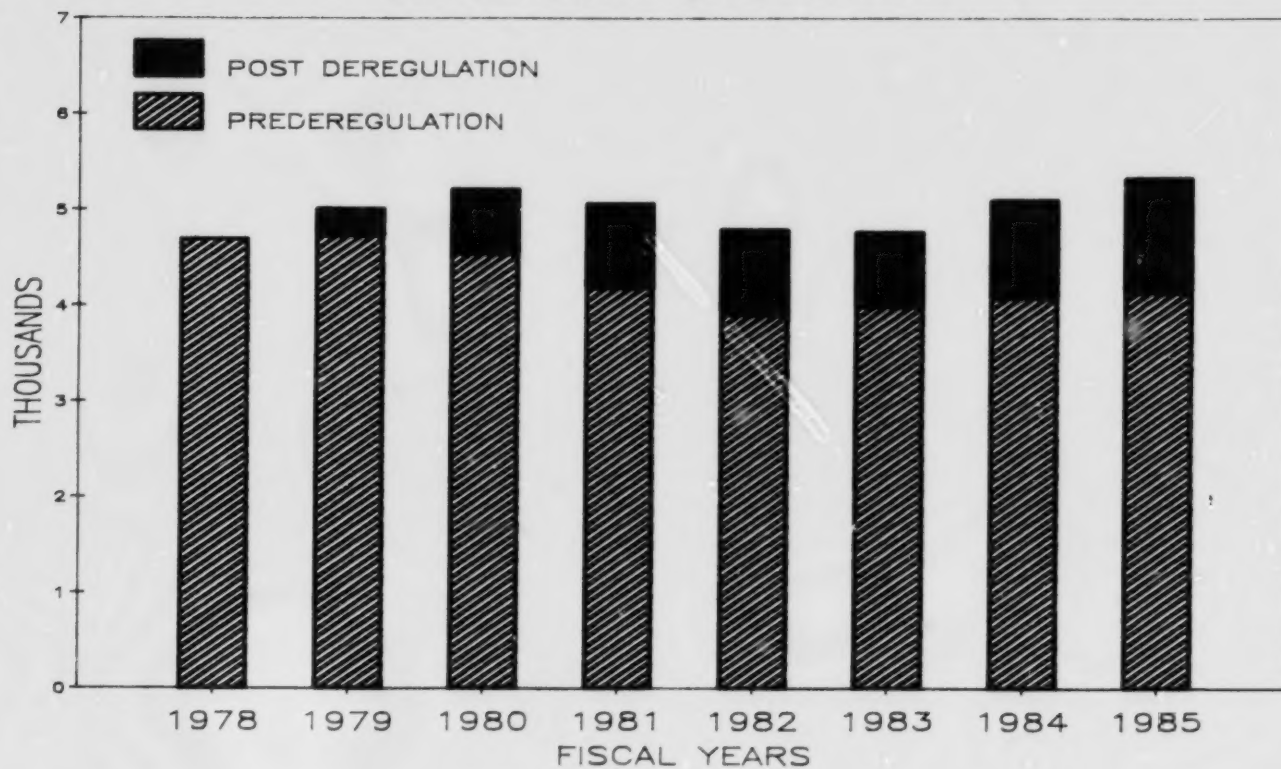
Between 1978 and 1985, the average size of the aircraft operated by the prederegulation carriers increased by almost 22 seats. However, the growth since 1982 has been only 3 seats, reflecting the industry trend toward the smaller two-engine aircraft which are better suited for hub-and-spoke type operations. Post deregulation carrier aircraft averaged 127 seats in fiscal 1985, almost double the size of the aircraft operated in 1979. However, it also appears that the average aircraft size for the post deregulation carriers may have reached an optimum size. The average aircraft size has increased by only 3 seats since 1983 and actually declined by 1 seat in 1985.

For the most part, the shifts in the share distribution and absolute number of revenue passenger miles, passenger enplanements, departures, trip length, and aircraft size reflect, to some extent, the impact that a deregulated environment has had on the commercial aviation industry. In addition, these shifts reflect the different approaches with which the industry has responded to the changes in economic growth and deregulation as they attempt to utilize their fleets and route structures in the most fuel efficient and profitable manner possible.

SCHEDULED DOMESTIC ENPLANEMENTS BY CARRIER GROUPINGS



DOMESTIC AIRCRAFT DEPARTURES BY CARRIER GROUPINGS



FORECAST ASSUMPTIONS

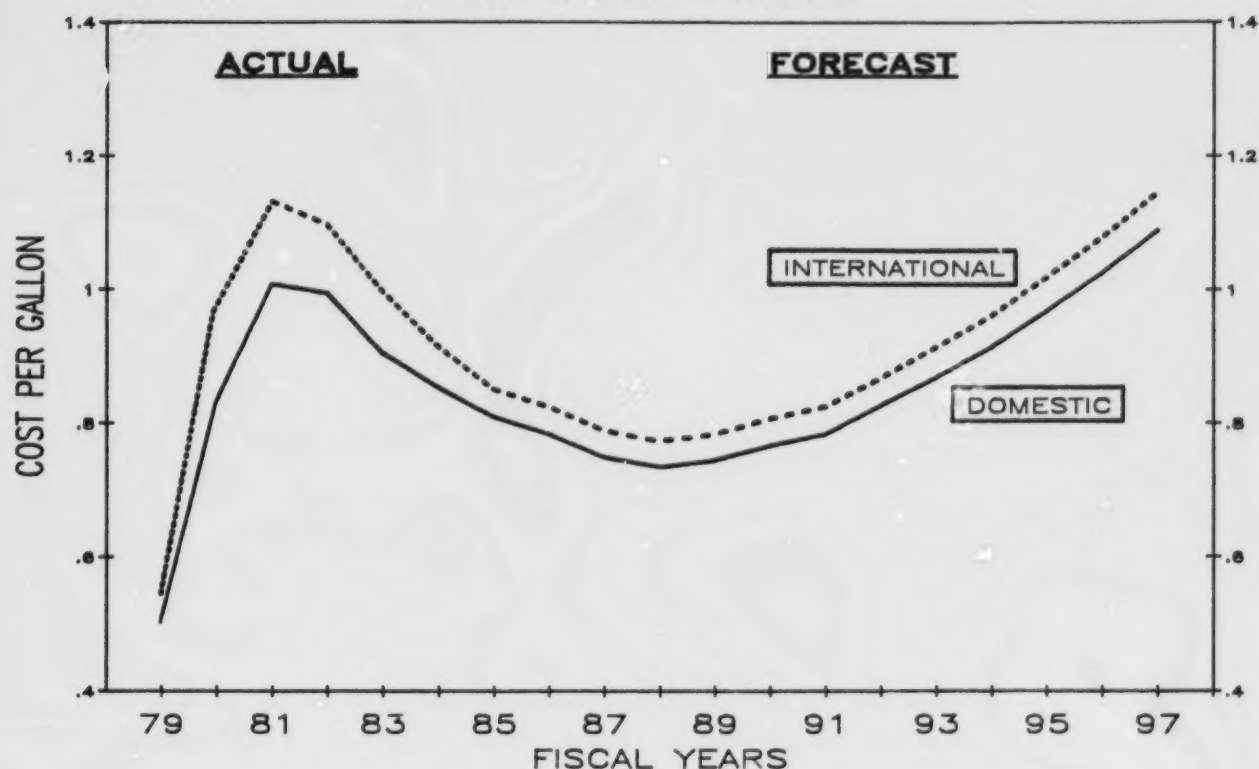
The baseline forecasts of commercial air carrier traffic and activity over the next 12 years anticipate that the industry will continue to be affected by the deregulation process at least into the next decade. While it is impossible to foresee all the changes that will occur in the years ahead, it is likely that there will be additional mergers; that we will see the emergence and disappearance of a number of low-cost, low-fare airlines; and that several of the carriers in existence today will cease operations. On the other hand, the resultant route systems and service patterns available to the traveling public will almost certainly reflect a better balance of service in terms of trip frequencies and fares than would be the case under a more closely regulated environment. The carriers will also continue to experiment with innovative ways of developing travel markets through discount fares or other travel incentives. In addition, the commercial air carriers can be expected to continue to experiment with their route systems, not only by expanding their present hubs but by developing new hubs as well.

Fuel Prices

Between 1978 and 1981, commercial air carriers were subjected to a 153 percent increase in the price of jet fuel, with the price of jet fuel rising to a peak of \$1.052 domestic and \$1.168 international in May 1981. However, an over supply of oil, caused in part by a worldwide recession and in part by successful worldwide conservation efforts, effectively reduced the demand for oil. This resulted in lower prices for all petroleum products, including jet fuel. Although U.S. air carrier jet fuel consumption has increased by over 15 percent during the past two years, jet fuel prices have declined for four consecutive years. At the end of fiscal 1985, domestic jet fuel prices had declined to \$0.785 per gallon, almost 26 percent below the May 1981 peak price. International jet fuel prices averaged \$0.829 in September 1985, 29 percent below the May 1981 peak price. Of course, declining jet fuel prices have had a direct impact on profits. In second quarter 1981, fuel costs accounted for 31.2 percent of total operating expenses. In second quarter 1985, fuel costs accounted for only 21.0 percent of total operating costs.

Jet fuel prices are expected to continue to decline for the next three years, declining to an average price of \$0.733 per gallon before resuming an upward trend in 1989. In fact, domestic jet fuel prices are not expected to exceed \$1.00 a gallon until 1996; and international fuel prices not until 1995. Over the entire forecast period, domestic jet fuel prices are forecast to increase at an average annual rate of 2.5 percent, to \$1.088 a gallon in 1997. International jet fuel prices are forecast to rise to \$1.146 in 1997.

U.S. COMMERCIAL AIR CARRIERS JET FUEL PRICES

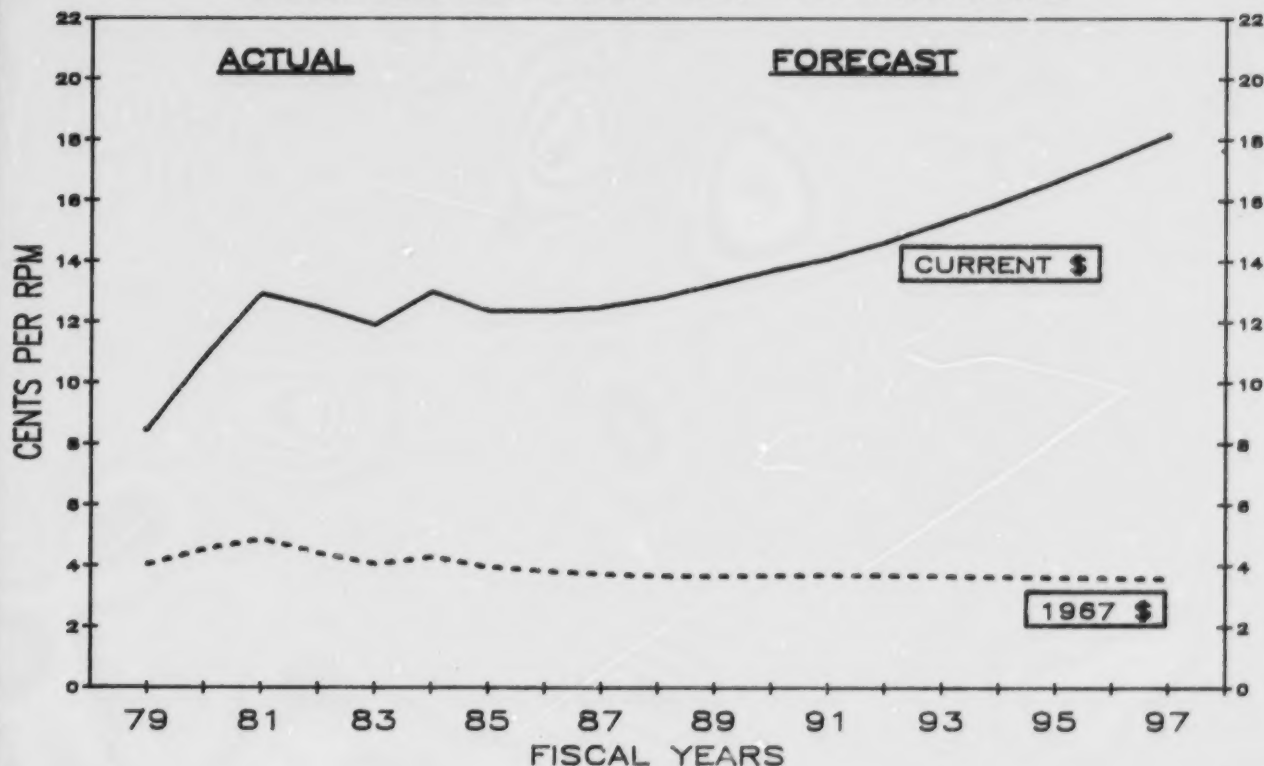


Passenger Yields

After increasing by 9.2 percent in 1984, domestic passenger yields declined by 5.0 percent in fiscal 1985, 8.2 percent in 'real' terms. Although yields continued to decline in fourth quarter FY-85, this year's forecast assumes that yields will remain constant in 1986 and then increase by only 1.2 in 1987 and 2.4 percent in 1988. For the twelve-year-forecast period, it is anticipated that yields will increase at an average annual rate of 3.3 percent, from 12.35 cents in fiscal 1985 to 18.17 cents in fiscal 1997. In 'real' dollars, domestic passenger yields are forecast to decline by 9.2 percent between 1985 and 1997, from 3.91 cents to 3.55 cents. The decline in 'real' yields is based on the assumption of further system optimization, continued competition from new low-cost carriers, moderate increases in labor and fuel costs, and the continued replacement of older aircraft by more fuel-efficient aircraft with lower unit operating costs than today's aircraft.

International passenger yields averaged 9.37 cents in fiscal 1985, a decline of 2.7 percent over fiscal 1984. In 'real' dollars, international yields declined 6.0 percent in fiscal 1985. It is expected that the international passenger yield will increase to 14.2 cents in 1997, an average annual increase of 3.5 percent. In 'real' terms, the international yield is forecast to decline to 2.7 cents by 1997, from 2.97 cents in 1985.

REVENUE PER PASSENGER MILE SCHEDULED DOMESTIC OPERATIONS

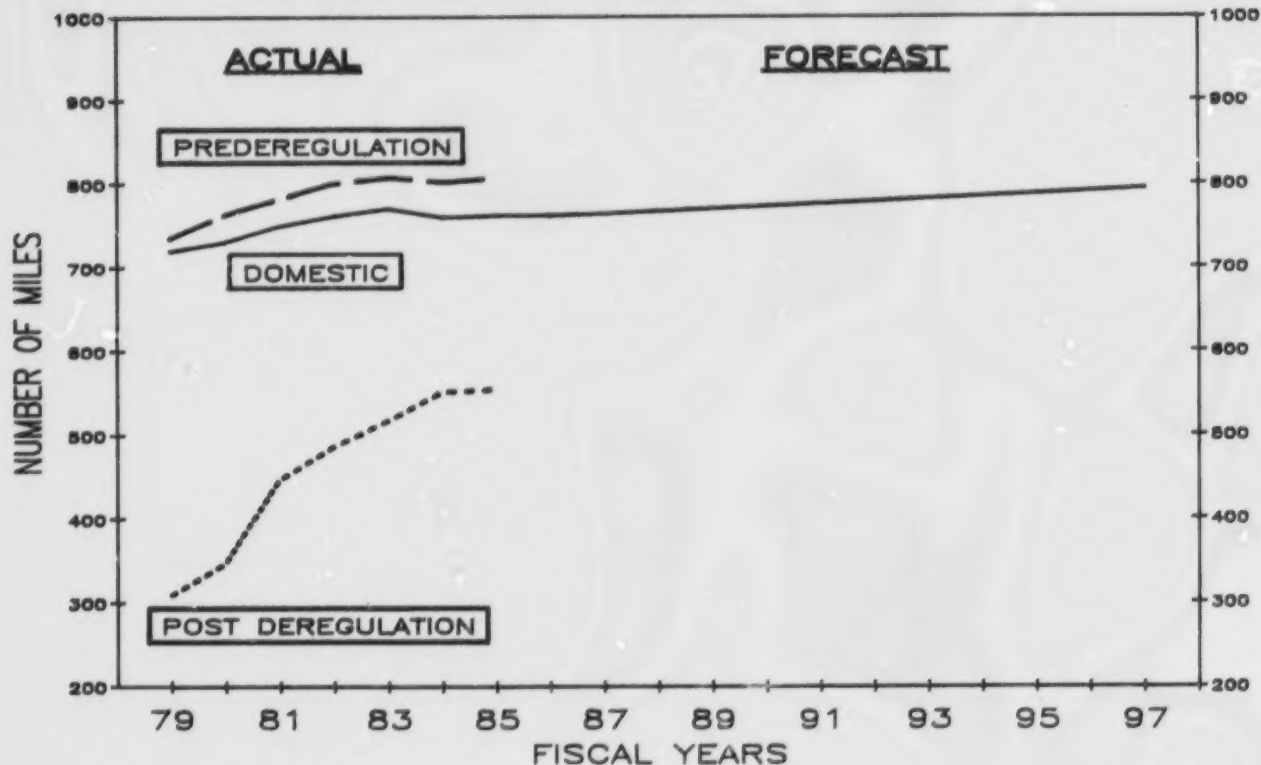


Passenger Trip Length

With each passing year since deregulation, it becomes clearer that a case can be made for a correlation between the average trip length and fares. When a large number of discount fares are available to the traveling public, a large number of discretionary travelers enter the market, usually traveling on the longer haul markets where lower discount fares are generally more available. When this happens, as during the fare wars of 1982-83, the average passenger trip length increases faster than the historical long-term average; i.e., the average trip length increased by 21 miles in 1982-83. Conversely, when fare levels increase, a large number of the discretionary travelers either cancel or postpone their trips until a later date, thus leaving the market to the shorter haul business travelers; i.e., fares increased by 9.2 percent in 1984 and the average trip length declined by 11 miles. In fiscal 1985, passenger yields declined by almost 5 percent and the average passenger trip length resumed its upward trend.

While this forecast assumes that the average passenger trip length will resume its historical long-term trend in 1987, it should be kept in mind that there are liable to be large swings around the trend line. The movement in any one year will be dependent upon the discount fare policies adopted by the air carriers in that particular year. Based on the historical long-term trend, we expect that the average passenger trip length will increase from 762 miles in fiscal 1985 to 794 miles in fiscal 1997. The international passenger trip length, owing largely to the expected increase in traffic on Pacific routes is forecast to increase by 80 miles over the forecast period, from 2,634 miles in fiscal 1985 to 2,714 miles in 1997.

AVERAGE PASSENGER TRIP LENGTH SCHEDULED DOMESTIC OPERATIONS

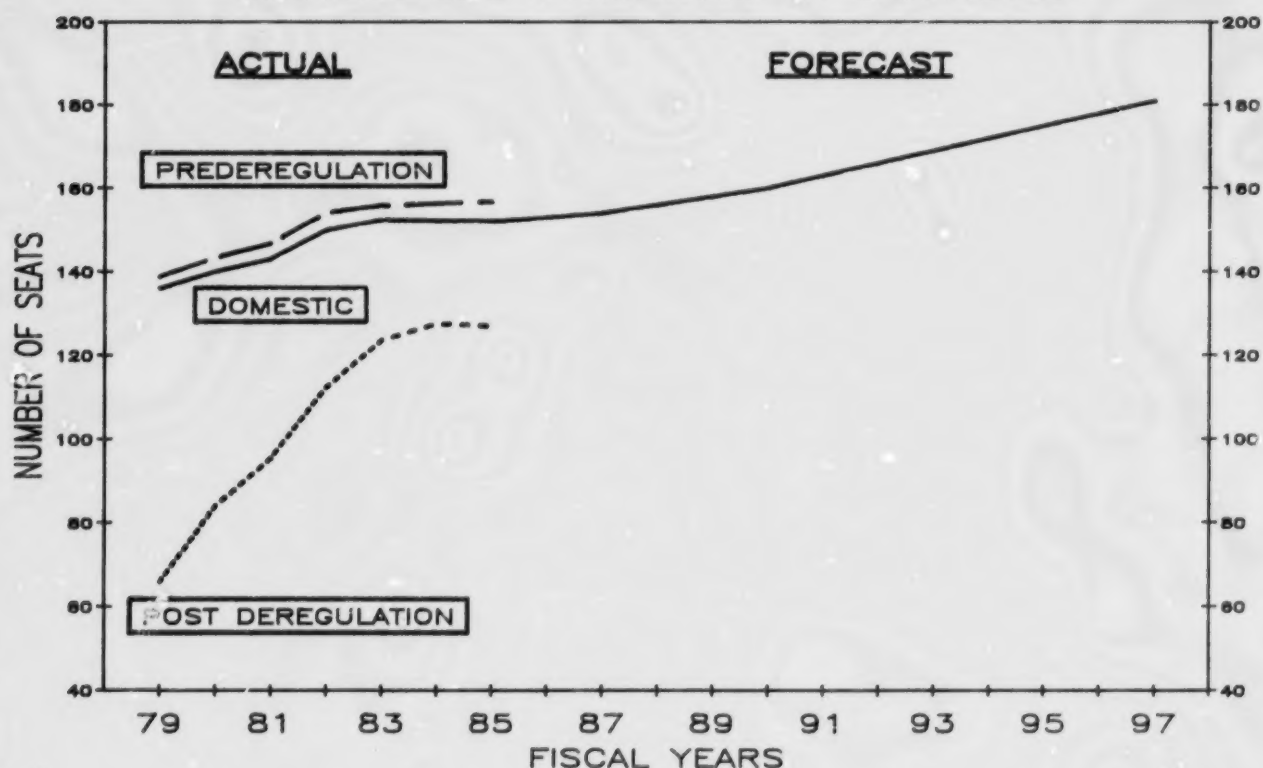


Average Aircraft Size

Deregulation, declining fuel prices, and the trend toward hub-and-spoke type route systems are, to some extent, responsible for the almost nonexistent domestic market for widebody aircraft. Continued high levels of intense competition from low-cost carriers has also increased the importance of higher frequencies and the demand for efficient aircraft with smaller capacities. As a result, the domestic industry's average aircraft seating capacity has actually declined by a half seat since 1983. However, we expect the average aircraft size to continue to grow throughout the forecast period, although at a rate somewhat less than the average long-term historical trend of three to four seats per year. In 1997, the average seating capacity of an aircraft in domestic service is expected to be 181 seats, up from 152 seats in fiscal 1985.

The average seating capacity on aircraft utilized in international service was 275 seats in fiscal 1985. We expect the average aircraft size of the international fleet to increase at a somewhat faster rate than the domestic fleet, averaging 322 seats in 1997.

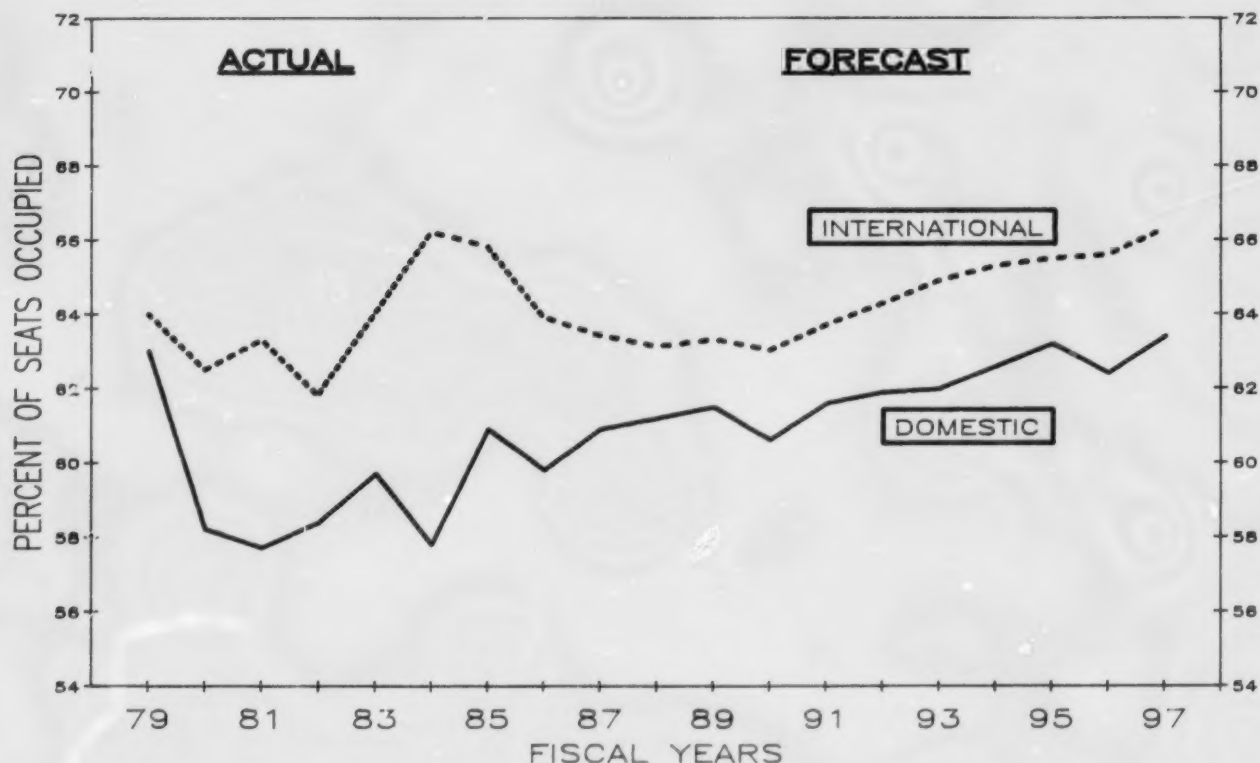
AVERAGE SEATS PER AIRCRAFT SCHEDULED DOMESTIC OPERATIONS



Load Factor

In fiscal 1985, the domestic load factor increased 3.1 points to 60.9 percent while the international load factor declined 0.4 points to 65.8 percent. Both the domestic and international load factors were overstated in 1985 due to strikes which limited operations at both Pan American and United Airlines during several months of the year. Based upon projected levels of capacity and traffic, the domestic load factor is expected to decline to 59.8 percent in 1986 and then increase to 60.9 percent in 1987. Thereafter, the load factor is forecast to increase gradually, reaching a peak of 63.4 percent in fiscal 1997. International load factors are forecast to decline gradually to 63.0 percent in 1990 and to resume an upward trend in 1991, reaching a peak of 66.3 percent in 1997.

U.S. COMMERCIAL AIR CARRIERS PASSENGER LOAD FACTOR



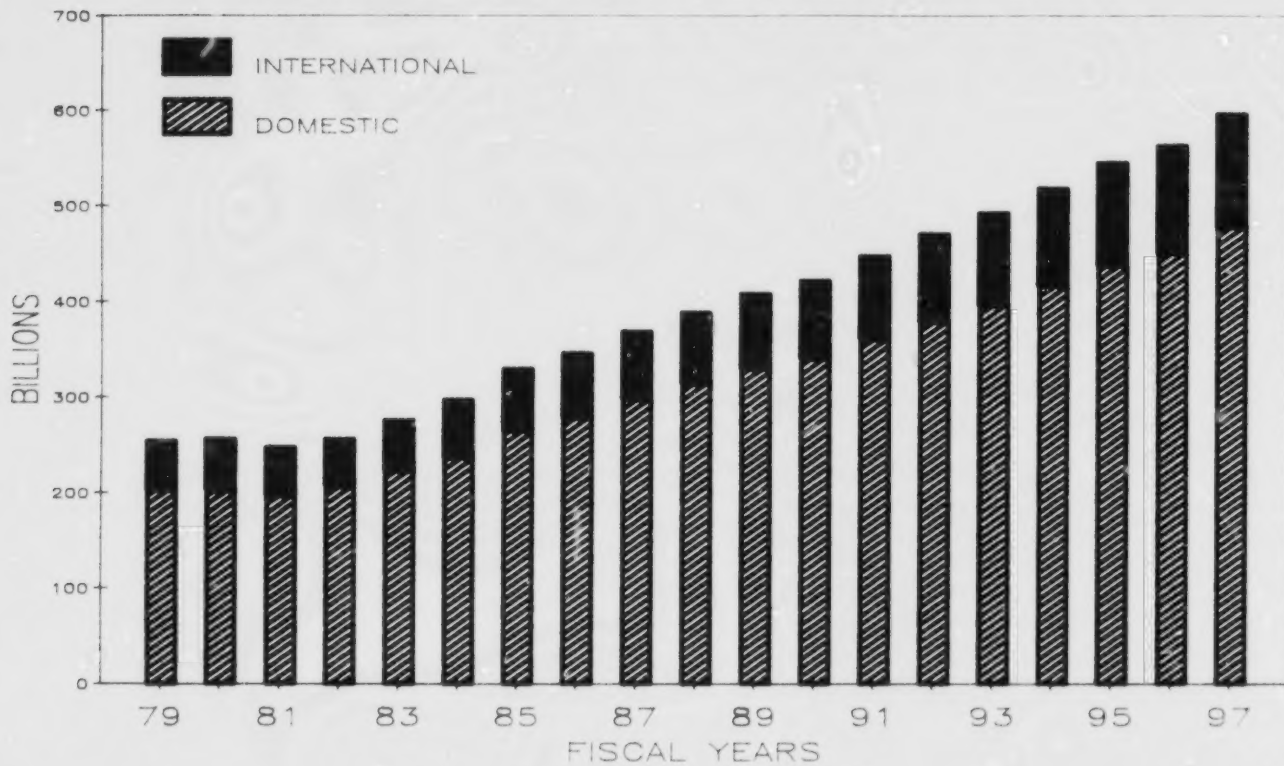
AIR CARRIER FORECASTS

Revenue Passenger Miles

U.S. commercial air carrier revenue passenger miles totaled 330.4 billion in fiscal 1985, 265.6 billion in domestic markets, and 64.8 billion in international markets. Domestic passenger miles are forecast to increase 5.0 percent in 1986 and 7.0 percent in 1987. Over the next twelve years, domestic passenger miles are forecast to increase at an average annual rate of 5.0 percent, totaling 478.6 billion in fiscal 1997.

International passenger demand is expected to remain weak over the next several years, due in part to unstable political situations abroad and, in part, to a weakening of the U.S. dollar relative to other foreign currencies. However, over the entire forecast period, international passenger miles are forecast to increase at an average annual rate of 5.2 percent, to 119.4 billion in 1997.

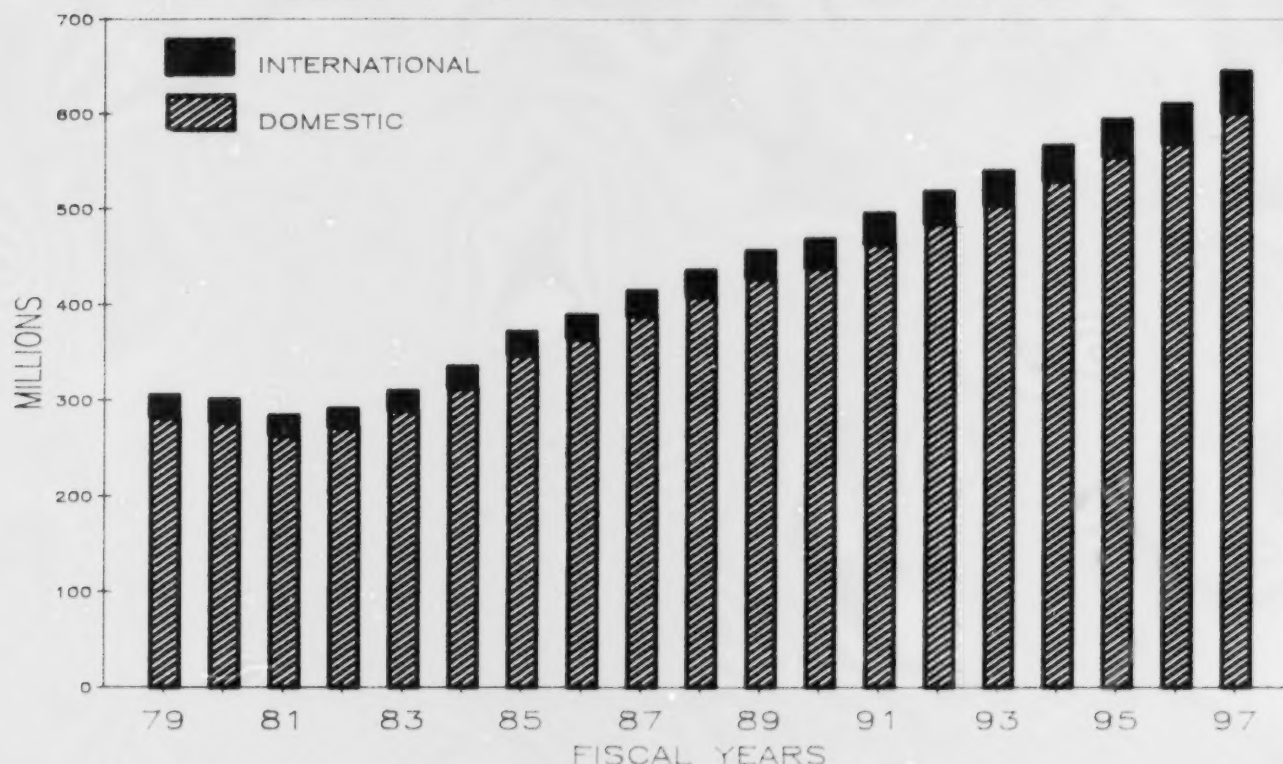
U.S. COMMERCIAL AIR CARRIERS SCHEDULED REVENUE PASSENGER MILES



Passenger Enplanements

In fiscal 1985, U.S. commercial air carriers enplaned 373.0 million passengers. Domestic travel accounted for 348.4 million enplanements, while international travel accounted for the remaining 24.6 million enplanements. Domestic enplanements are forecast to increase 5.0 percent in 1986, 6.7 percent in 1987, and average 4.7 percent annually throughout the forecast period. Domestic enplanements are expected to total 602.8 million in 1997. International enplanements are expected to increase at an average annual rate of 5.0 percent between 1985 and 1997, totaling 44.0 million in 1997.

U.S. COMMERCIAL AIR CARRIERS SCHEDULED PASSENGER ENPLANEMENTS

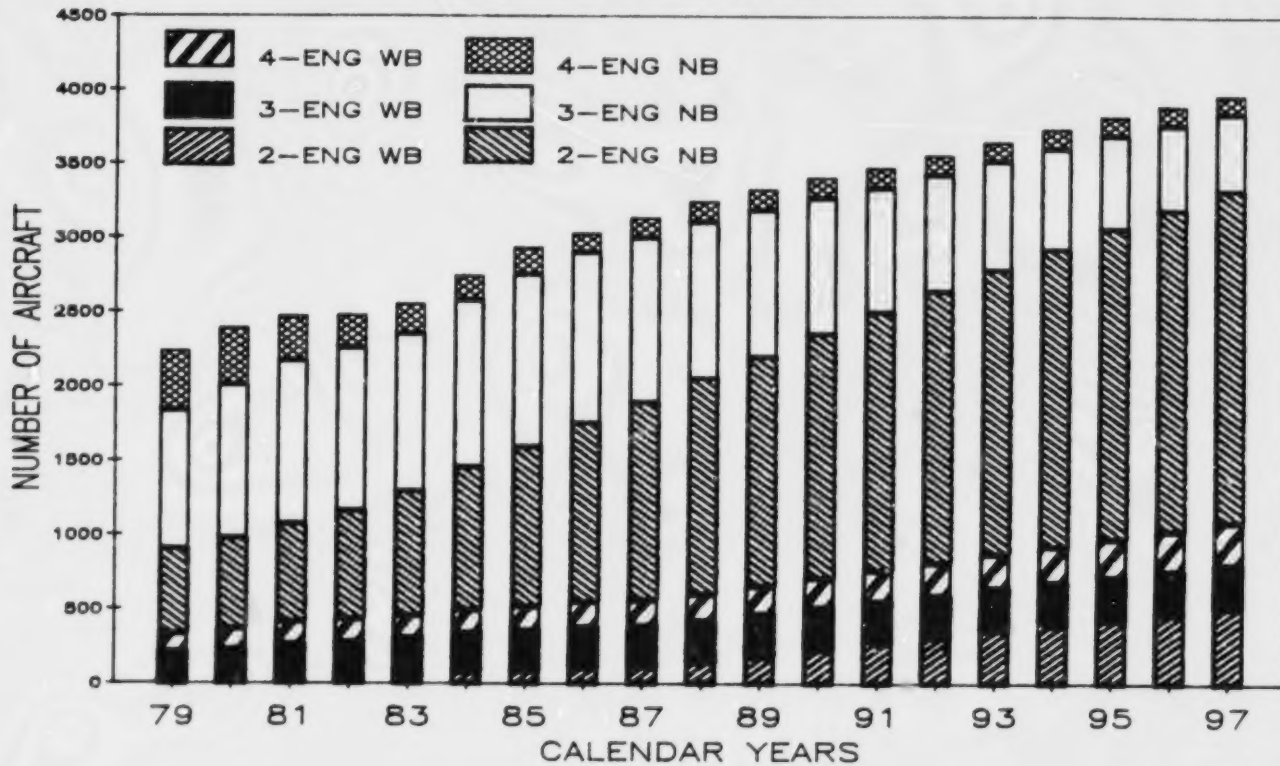


Air Carrier Fleet

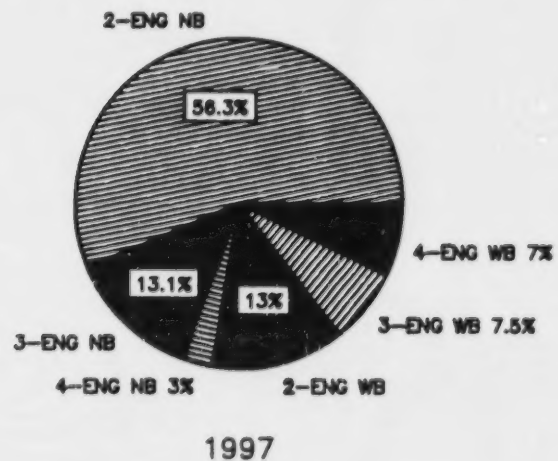
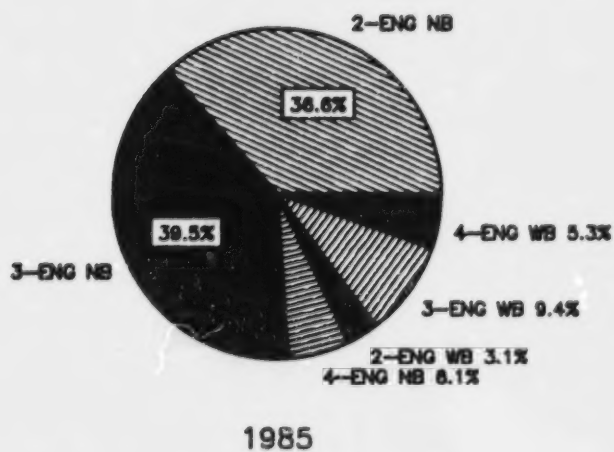
Aircraft manufacturers delivered a total of 254 large jet aircraft during the first three quarters of fiscal 1985. Of this total, 65.7 percent were two-engine narrowbody aircraft. Also during this same time period, a total of 232 orders were placed with aircraft manufacturers for large jet aircraft. Of this total, 78 percent were for two-engine narrowbody aircraft. At the end of third quarter FY-85, aircraft manufacturers had a backlog of 699 aircraft orders; 72.1 percent of the backlog was for two-engine narrowbody aircraft.

Based upon this backlog of orders and the projections of air carrier traffic, seat capacity, and load factor, the U.S. commercial air carrier fleet is projected to increase from a total of 2,938 large jet aircraft in 1985 to a total of 3,976 aircraft in 1997, an average increase of 2.6 percent, or 87 aircraft annually. By far the fastest growth occurs in two-engine narrowbody aircraft (DC-9, B-737, and B-757), which are expected to grow by an average of 97 aircraft annually. In 1997, two-engine narrowbody aircraft will total 2,240 units and will account for 56.3 percent of the total fleet, up from 36.6 percent in 1985. This trend reflects the fact that the prospect for continued levels of intense competition increases the importance of higher frequencies and the demand for aircraft with smaller capacities. The number of three-engine narrowbody aircraft (B-727) and four-engine narrowbody aircraft (B-707, DC-8 and BA-146) are expected to decline in absolute number over the forecast period.

U.S. COMMERCIAL AIR CARRIERS LARGE JET AIRCRAFT



PERCENT BY AIRCRAFT TYPE

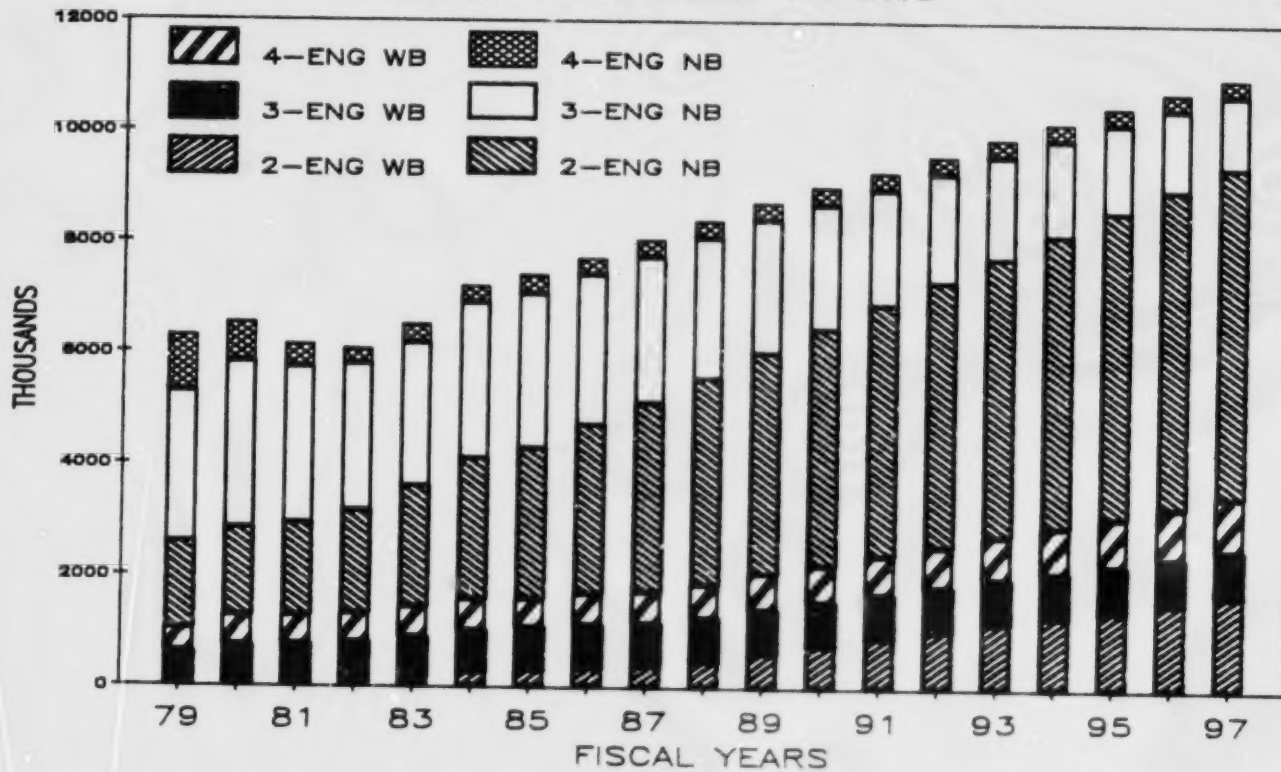


Widebody aircraft, which accounted for only 17.8 percent of the fleet in 1985, are expected to account for almost 27.5 percent of the large jet fleet in 1997. Two-engine widebody aircraft (A-300, B-767), the fastest growing of the widebody groupings, are expected to increase by an average of almost 36 aircraft annually.

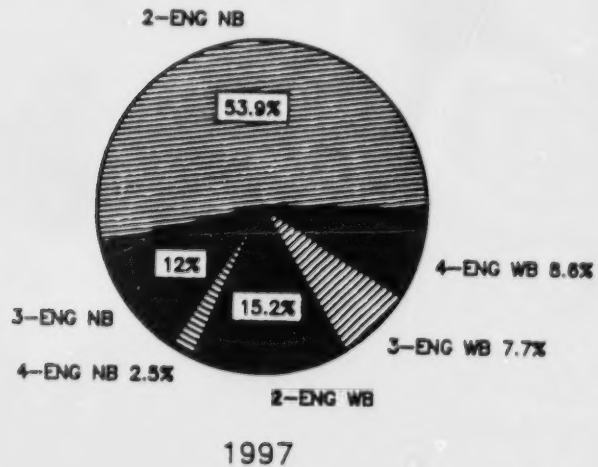
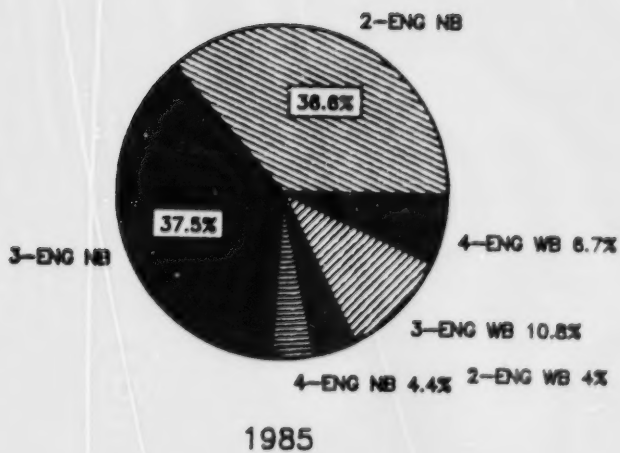
Hours Flown

Despite the strikes at Pan American and United Airlines, U.S. commercial air carriers flew almost 7.4 million hours in fiscal 1985, an increase almost 3.0 percent over 1984. Two aircraft categories accounted for the majority of these airborne hours; three-engine narrowbody aircraft for 37.5 percent and two-engine narrowbody aircraft for 36.6 percent. In 1997, the number of airborne hours are forecast to increase to 11.0 million, an average annual increase of 3.4 percent. Two-engine aircraft are expected to account for the majority of the airborne hours in 1997; 53.9 percent by two-engine narrowbody aircraft and 15.2 percent by two-engine widebody aircraft. The number of airborne hours flown by three-engine narrowbody aircraft is expected to decline by 52.3 percent between 1985 and 1997.

U.S. COMMERCIAL AIR CARRIERS TOTAL AIRBORNE HOURS



PERCENT BY AIRCRAFT TYPE



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CHAPTER IV

REGIONALS/COMMUTERS



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Chapter IV

Regionals/Commuters

In September 1985, there were approximately 160 regional/commuter airlines reporting to RSPA on Form 298-C. The FAA historical data base includes activity for all carriers operating in the 48 contiguous states, Hawaii, Puerto Rico, and the U.S. Virgin Islands. Excluded from the data base is commuter activity in Alaska and foreign territories. Although included in the historical data base through 1984, Empire Airlines has been excluded from 1985 activity counts and forecasts because of the predominance of jet aircraft in its fleet.

REVIEW OF 1985

Fiscal 1985 appears to have been a period of transition for the regional/commuter airline industry. While not characterized by the dramatic rate of growth of recent years, other significant factors have begun to emerge which will affect future industry composition and growth. These factors include a stabilization in the number of markets served by the large jet operators, the proliferation of alignments with large commercial air carriers through code-sharing agreements, and the continued decline in the total number of regional/commuter operators. However, the carriers who have survived this period of transition are the larger and more stable regional/commuter airlines.

During fiscal 1985, revenue passenger enplanements increased by 2.1 percent to 24.2 million, while revenue passenger miles increased by 5.6 percent to 3.8 billion. Excluding Empire from the 1984 traffic base, enplanements and revenue passenger miles increased by 6.6 and 10.8 percent, respectively. For the 48 states, enplanements increased by 3.3 percent and revenue passenger miles increased by 6.9 percent. Again, excluding Empire from the 1984 traffic counts, enplanements and revenue passenger mile growth in 1985 increased by 9 percent and 12.6 percent, respectively. However, traffic for Hawaii, Puerto Rico, and the Virgin Islands declined in 1985, with enplanements down 10.7 percent and revenue passenger miles down 9.6 percent. This decrease was almost totally attributable to the cessation of operations by Prinair in June 1985.

Although not included in the historical data base, traffic in Alaska and foreign territories accounted for approximately 3.5 percent of the total commuter activity in fiscal 1985. Passenger enplanements in Alaska and foreign territories totaled just under 900,000 in 1985, up 9 percent over 1984.

RECOGNITION AND GROWTH

Formal recognition of a developing third-level airline industry and coining of the term "commuter" date back to 1969 when commuter airlines were first required to register with, and report activity data to, the Civil Aeronautics Board (CAB). Growth of the commuter industry can be attributed, in large part, to the role it plays as a feeder of traffic to the larger commercial airlines. The significance of this role is reflected in the growth of the number of communities served exclusively by commuters, and in the increasing size and sophistication of aircraft operated by these airlines. The maximum number of seats allowed without special exemption has increased from 19 seats in 1969 to 30 seats in 1972, to 56 seats by the Airline Deregulation Act of 1978, and later to 60 seats by CAB regulatory action.

Probably the most significant factor underlying the growth of commuters was the conversion to large turbojet aircraft by the large commercial carriers. The cost of operating these large turbojet aircraft was such that traffic at small communities proved insufficient to justify regular scheduled service. Airline deregulation accelerated this process as the larger certificated air carriers abandoned many of these smaller markets to concentrate on the high density, medium, and long-haul markets--markets where the larger jet aircraft are best suited.

As the large commercial air carriers embarked on programs to rationalize their route structures and increase their aircraft utilization and fuel efficiency, the commuters moved into those markets abandoned by the larger carriers. In most cases where commuter replacement service has occurred, the affected communities are offered far greater schedule frequency than the larger air carriers could afford, given their large aircraft and the low passenger density of the markets. In many markets, demand has substantially increased as a result of the greater schedule frequency.

Because of the early restrictions on the size of aircraft they were allowed to operate, the commuter airlines were restricted to the use of general aviation aircraft (mostly with 9 seats or less). These seat restrictions, and the resultant type of aircraft operated, hampered both the commuters' ability to attract surface passengers and the quality of service provided. The restrictions also eliminated any incentive for manufacturers to design and build aircraft particularly suited to commuter air service. As the seat restrictions were gradually relaxed, there has been a growing trend toward utilization of the larger turboprop aircraft.

Today, manufacturers in the United States and, more significantly, in other countries are delivering aircraft designed to serve commuter markets more efficiently. These larger aircraft are proving to be attractive to travellers accustomed to the amenities of air carrier jets, and thus contribute to greater public acceptance vis-a-vis other modes of transportation. With the move to larger aircraft and greatly expanded route structures, many of today's regional/commuter airlines resemble the local service carriers of an earlier day.

INDUSTRY COMPOSITION

The regional/commuter airline industry developed and grew in an unregulated environment. This regulatory freedom allowed the commuter airlines to enter markets, terminate service and set rates without costly regulatory proceedings, thus allowing them the flexibility to experiment and respond to existing market conditions. Given this freedom of entry and exit from the marketplace, there have been, at one time or another, almost 600 different carriers who have reported commuter passenger traffic to CAB/RSPA during the 1970 to 1985 time period.

As of September 1985, there were approximately 160 regional/commuter airlines reporting to RSPA, compared with a high of about 250 in 1981. Considering the large number of commuters that have operated since 1970, and the fact that the most that ever reported in any one year was about 250, one is left with the impression of a highly volatile industry. During this time period there were at least 260 carriers that operated for two years or less and, of that total, 180 were in operation for one year or less. These carriers have accounted for over 40 percent of the turnover within the industry.

When looked at in more detail, there is a much greater degree of industry stability than is readily apparent when looking at only the total number of carriers that have operated in any given year. Of the current 50 largest commuter airlines, almost 70 percent have been in business for over 10 years. Of the 160 regional/commuter airlines operating in 1985, 35 percent have been in business for 10 years or more, and more than half have been in business for 7 years or longer.

Although the total number of regional/commuter airlines has declined over the past several years, a core of stable, growing airlines has evolved to become an integral part of the air transportation industry. The growth in size is evidenced by the fact that the average number of passenger enplanements per carrier has increased from just over 30,000 in 1970 to over 156,000 in 1985. Underscoring the growth in size and significance of the regional/commuter airlines, there were three commuters that enplaned 1 million or more passengers during 1985. Additionally, some 60 commuters reported over 100,000 passenger enplanements in 1985 compared with only 6 carriers reporting over 100,000 enplanements in 1970.

This trend toward industry consolidation and increased size is expected to continue throughout the forecast period. With increased concentration will come more intense competition. This is evidenced by the rapid increase in the number of affiliations with large commercial air carriers in the form of code-sharing agreements. As of November 1985, there were 37 regional/commuter operators involved in code-sharing agreements with 13 large air carrier operators. These agreements covered operations at 26 large hub airports. In order to compete effectively, or even survive, the smaller commuter/regional operators may have to merge with or acquire other commuter operators, and/or enter into a code-sharing agreement with a compatible large air carrier. This becomes more significant as replacement service for abandoned markets becomes less important as a source for growth.

AIR CARRIER/COMMUTER AIRLINE CODE-SHARING AGREEMENTS

<u>AIR CARRIER PROGRAM NAME</u>	<u>DESIGNATED COMMUTER CARRIER</u>	<u>HUBS SERVED</u>
1. AMERICAN Eagle	Air Midwest Air Virginia Chaparral Metro Simmons	Nashville Charlotte Washington Dallas/Ft. Worth Dallas/Ft. Worth Chicago
2. CONTINENTAL Commuter	Pioneer Royale	Denver Houston
3. DELTA Connection	Atlantic Southeast Comair Ransome Rio	Atlanta Memphis Cincinnati Boston New York Philadelphia Washington Dallas/Ft. Worth
4. EASTERN Express	Air Midwest Atlantis Metro	Kansas City Atlanta Charlotte Atlanta
5. NEW YORK AIR Connection	Colgan	Washington Dulles
6. NORTHWEST Airlink	Big Sky Mesaba	Billings Minneapolis/St. Paul
7. OZARK	Air Midwest Gull Air	St. Louis Miami

Air Carrier/Commuter Airline Code-Sharing Agreements (Continued)

<u>AIR CARRIER PROGRAM NAME</u>	<u>DESIGNATED COMMUTER CARRIER</u>	<u>HUBS SERVED</u>
8. PIEDMONT Commuter	Eritt Henson Jetstream Sunbird	Dayton Baltimore Baltimore Dayton Charlotte
9. RepubLink (REPUBLIC)	Republic Express Simmons	Memphis Detroit Minneapolis/St. Paul
10. TRANS WORLD Express	Resort Air	St. Louis
11. UNITED	Air Wisconsin* Aspen Horizon Air* Rocky Mountain San Juan Westair	Chicago Denver Seattle/Portland Denver Seattle San Francisco
12. Allegheny Commuter (U.S.AIR)	Air Kentucky Chautauqua Crown Fischer Brothers Pennsylvania Pocono Southern Jersey Suburban	St. Louis Orlando Pittsburgh Pittsburgh Detroit Pittsburgh Philadelphia Philadelphia Pittsburgh
13. WESTERN	Sky West	Salt Lake City

* Carrier operates both large jet and small commuter aircraft.

Because of their relatively small size, most regional/commuter airlines find themselves restricted with regard to access to large financial institutions as a source of capital for expansion. This is especially important when considering the upgrading/expansion of current fleets with the new generation of aircraft coming on-line now and over the next several years. Thus, size and financial stability will be important factors in opening access to capital markets and in negotiating financing for the purchase of new aircraft for future expansion. To the extent that financial stability is enhanced by size and/or profitable feeder agreements with large air carriers, this will also contribute to continued industry consolidation.

Many people within the industry see this trend of decreasing number of operators and increasing size ultimately leading to an industry dominated by 50 to 60 regional/commuter airlines.

FORECAST ASSUMPTIONS

It is expected that the average number of seats per aircraft, the number of aircraft, the number of city-pairs served, and the average passenger trip length will increase over the forecast period. However, it is assumed that the regionals/commuters will continue to serve primarily those markets under 200 miles where they are now concentrated. Growth achieved through replacement of air carrier service has just about run its course and should cease to be a major factor. Future industry growth is expected to come from increased demand placed on a stable, mature commuter airline industry.

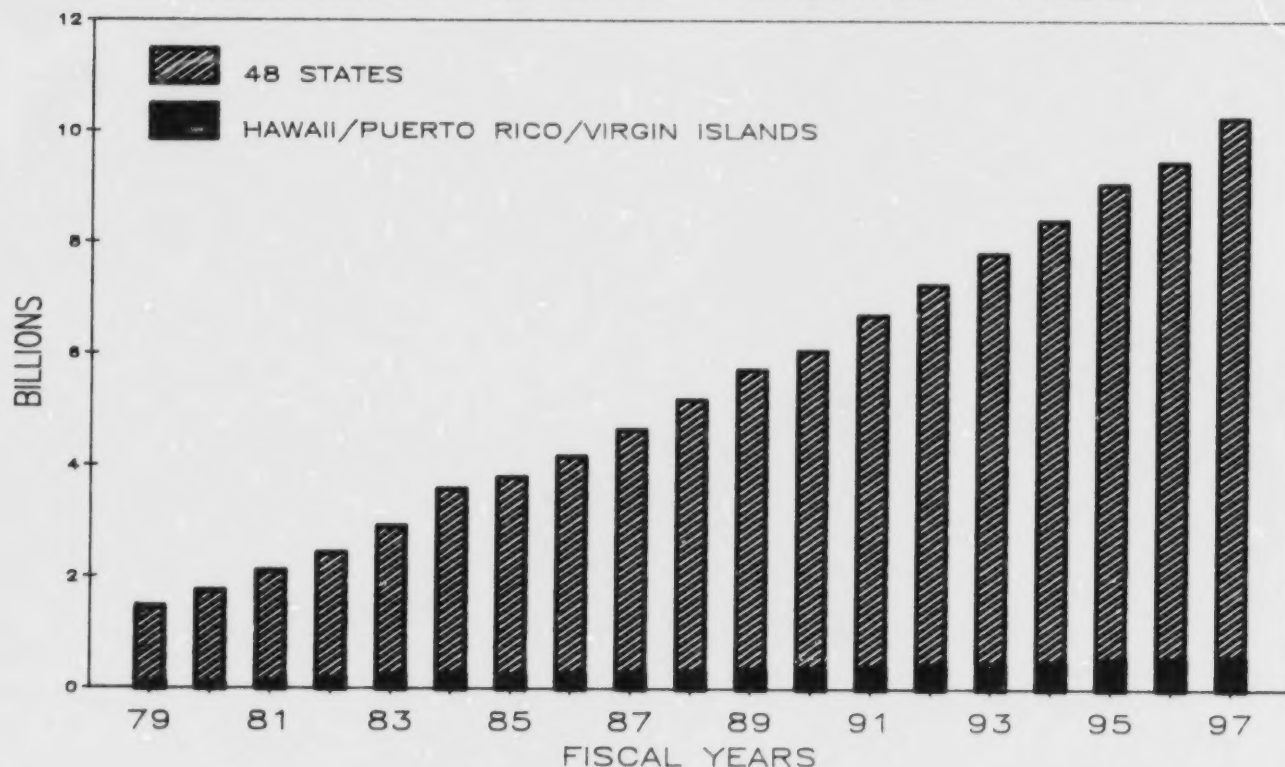
REGIONAL/COMMUTER FORECASTS

After a brief slowdown in the demand for commuter air service in 1982, the strong growth in commuter activity relative to other segments of the aviation industry resumed in 1983 and continued through 1985. The current forecasts anticipate higher growth rates in the early years of the forecast period and then a gradual decline in the magnitude of that growth as 1997 is approached. Empire Airlines is excluded from the forecasts.

Revenue Passenger Miles

Revenue passenger miles are expected to total 10.3 billion in 1997, almost triple 1985's traffic level. Passenger miles are projected to increase 9.9 percent in 1986, 11.4 percent in 1987, and average 8.7 percent over the 12-year forecast period. In the 48 contiguous states, revenue passenger miles are forecast to total 9.7 billion in 1997; increasing by 10.0 percent in 1986, 11.6 percent in 1987 and averaging 8.7 percent between 1985 and 1997. Traffic in Hawaii, Puerto Rico, and the U.S. Virgin Islands is forecast to increase by 8.4 percent in 1986, 7.9 percent in 1987, and average 7.3 percent over the entire forecast period, totaling 584 million passenger miles in 1997.

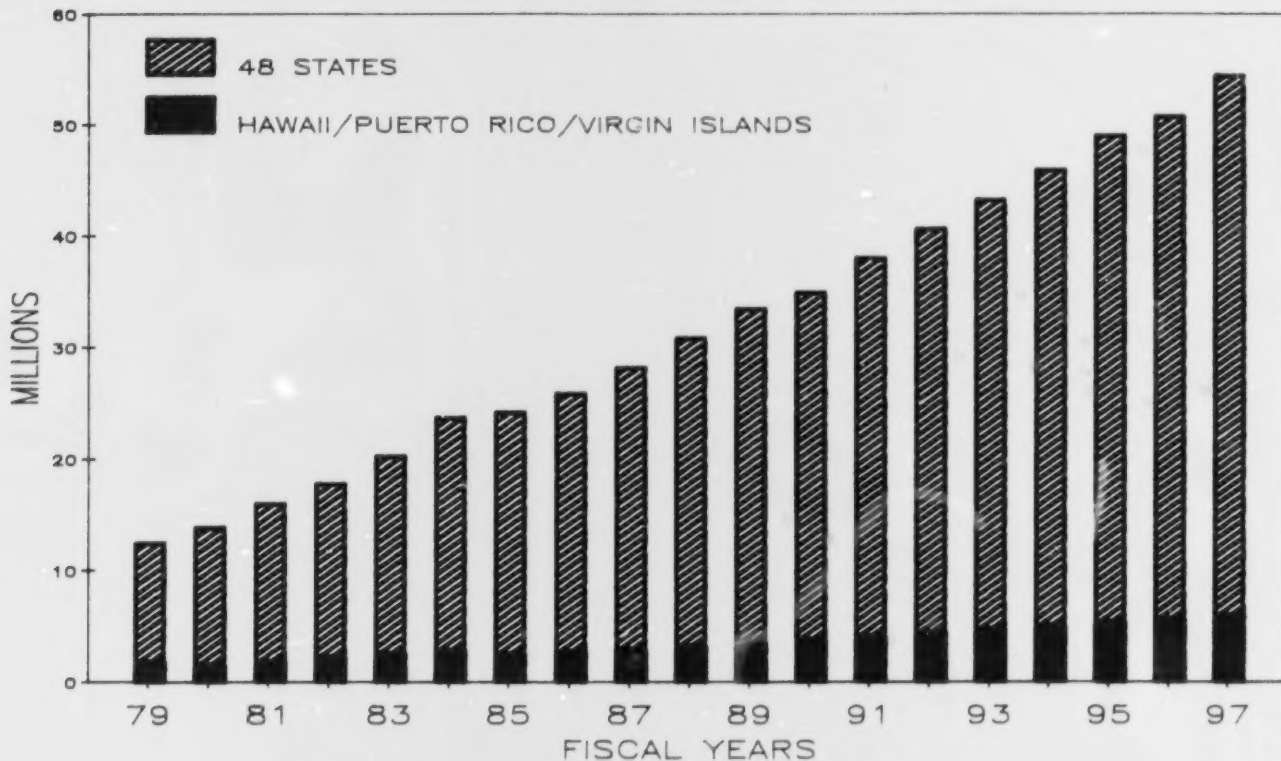
U.S. REGIONAL/COMMUTER AIR CARRIERS SCHEDULED REVENUE PASSENGER MILES



Passenger Enplanements

Passenger enplanements are forecast to reach 54.5 million in 1997, more than double the 1985 enplanements. Overall, passenger enplanements are expected to increase by 7 percent in 1986, 8.9 percent in 1987, and average 7 percent over the forecast period. In the 48 states, passenger enplanements are projected to increase 6.9 percent in 1986, 9.1 percent in 1987, and average 6.9 percent between 1985 and 1987, totaling 48.6 million in 1997. Passenger enplanements in Hawaii, Puerto Rico, and the U.S. Virgin Islands are expected to total 5.9 million in 1997, growing by 8 percent in 1986, 7.4 percent in 1987, and averaging 7.4 percent over the 12-year forecast period.

U.S. REGIONAL/COMMUTER AIR CARRIERS SCHEDULED PASSENGER ENPLANEMENTS

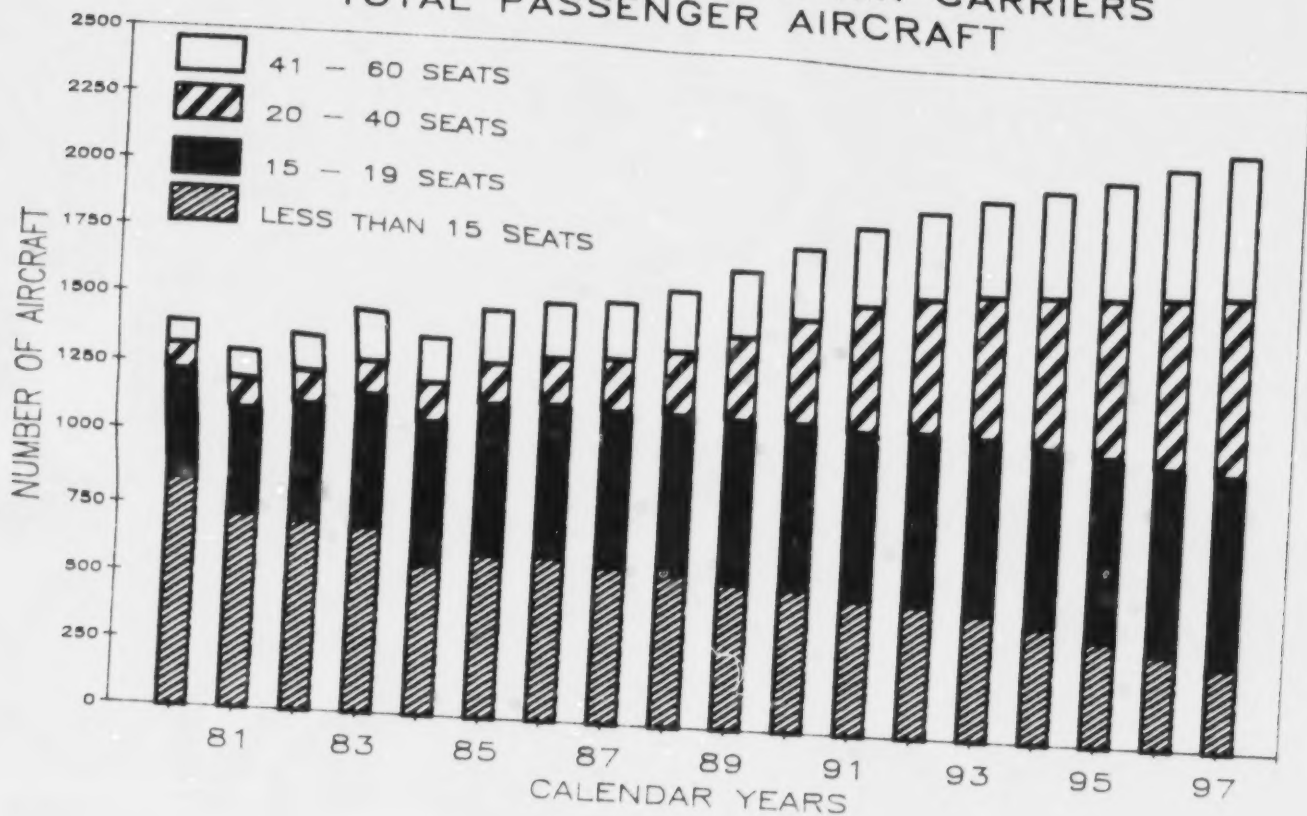


Commuter Fleet

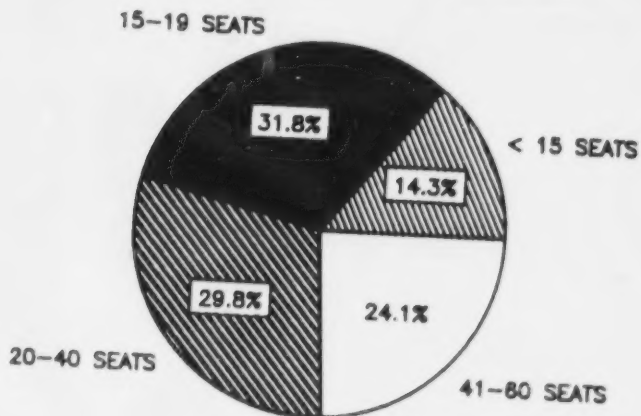
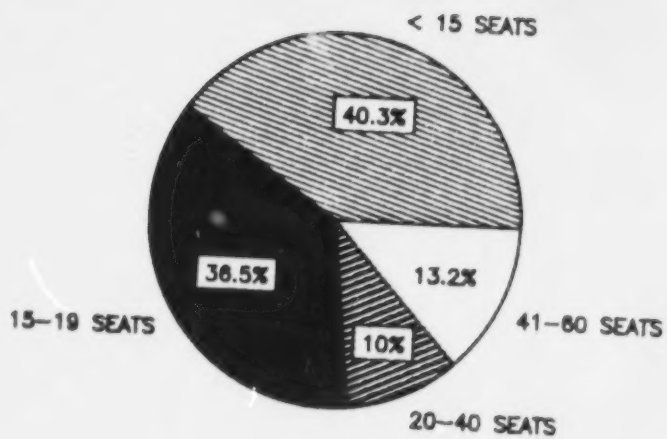
The growth of the regional/commuter airline industry is also reflected in the growth and changing composition of the commuter aircraft fleet, the trend being toward greater utilization of larger aircraft. The total fleet is forecast to grow at an average annual rate of 3.2 percent through 1997, increasing from 1,531 aircraft in 1985 to 2,245 in 1997. However, more important than the growth in the total number of aircraft is the changing composition of the fleet.

In 1980, aircraft with less than 15 seats accounted for 60.9 percent of the total commuter fleet. By 1985, this category's share of the total fleet had declined to just over 40 percent. This downward trend is expected to continue throughout the forecast period. The number of aircraft in the less-than-15 seats category is expected to decline by 48 percent between 1985 and 1997, and to account for just over 14 percent of the total fleet in 1997.

U.S. REGIONAL/COMMUTER AIR CARRIERS TOTAL PASSENGER AIRCRAFT



PERCENT BY AIRCRAFT SEAT SIZE



The "15-19 seats" category represents the largest portion of the fleet, increasing from 25.8 percent in 1980 to 36.5 percent in 1985. While this category will continue to account for the largest portion of the fleet throughout the forecast period, its relative share of the total fleet will decline to just under 32 percent in 1997.

The largest growth in the regional/commuter fleet will be in the "20-40 seats" and the "greater than 40 seats" categories. In 1980, these categories accounted for only 7.1 and 6.1 percent of the total fleet, respectively. By 1985, the "20-40 seats" category increased to 10.0 percent and the "greater than 40 seats" category to 13.2 percent. By 1997, these two categories are expected to account for over half of the total fleet, 29.8 percent in the "20-40 seats" category and 24.1 percent in the "greater than 40 seats" category. During the forecast period, aircraft in the "20-40 seats" category are expected to increase from 154 aircraft in 1985 to 670 in 1997, an average annual increase of 13.0 percent. Aircraft in the "greater than 40 seats" category are expected to increase from 203 aircraft in 1985 to 541 in 1997, an average annual growth of 8.5 percent. This trend toward larger aircraft will increase the average seat size per aircraft from 19.4 in 1985 to 27.7 seats in 1997.

CHAPTER V

GENERAL AVIATION



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Chapter V

General Aviation

The general aviation industry is undergoing substantial structural changes. These changes indicate that the long-term growth of the active fleet and activity will be slowing. For the past seven years general aviation shipments have continuously declined, from a peak of 17,811 units in 1978 to 2,438 in 1984. The decline in aircraft sales is complemented by decreasing numbers of student and private pilots. Between 1980 and 1984, the number of student pilots declined from 210,200 to 150,100, and the number of private pilots declined from 343,300 to 320,100. The export market has also experienced a long recessionary period. Exports fell from 3,995 aircraft in 1979 to 336 in 1984, a yearly rate of decline close to 40 percent. Ultimately, the shrinking stock of pilots and the slowing in the expansion of the general aviation fleet will reduce the rate of growth of activity at FAA facilities.

The failure of the industry to respond to the current economic recovery, which has been one of the most robust of the postwar period, is puzzling. Historically, the economic cycle of the general aviation industry has closely paralleled that of the national economy. The theories about the reasons for the continuing decline in sales and pilots are diverse. Some cite continued high aircraft prices, changing tastes and preferences, and the availability of low-cost alternatives such as ultralights. Others say that high operating costs and interest rates have been responsible for depressing the industry. Still, others say that current and proposed tax legislation and high product liability costs are responsible. And there are some who feel that the overvalued dollar is severely depressing the export market. To be sure, each one of these factors has had some effect. The Office of Aviation Policy and Plans has performed numerous analyses and statistical tests on all the available data and has arrived at the following conclusions about the general aviation market.

1. Rapidly rising aircraft prices have significantly reduced the demand for all types of aircraft.
2. Continued high operating costs are depressing the market for single engine piston aircraft and reducing aviation activity.
3. Rising operating costs do not appear to influence the demand for the larger more sophisticated aircraft.
4. Aircraft prices have been increasing at a faster rate than wage rates. This implies that other factors such as rapidly rising product liability costs and declining productivity are responsible for price increases.

5. The high value of the dollar has significantly reduced foreign sales.
6. Relatively high aircraft prices have reduced foreign sales.
7. Avionics prices have been increasing at a faster rate than aircraft prices.
8. Relatively high aircraft prices and operating and maintenance costs have reduced the number of student and private pilots.

REVIEW OF 1985

Fleet Composition and Aircraft Shipments

As of January 1, 1985, the general aviation fleet consisted of 220,943 aircraft. The annual growth rate of the total fleet for the period 1980 to 1985 was only 0.9 percent. During this period, the population of single engine piston aircraft increased from 168,400 to 171,900, a yearly rate of increase of 0.4 percent. For the same time frame, the multi-engine piston fleet remained stable at approximately 25,000 aircraft; turbine-powered fixed wing aircraft grew at an annual rate of 10.3 percent; and the rotorcraft fleet increased about 4.1 percent a year.

Shipments of general aviation aircraft (excluding helicopters, balloons, dirigibles, and gliders) declined approximately 16 percent in 1985. Single engine and multi-engine piston aircraft deliveries fell 15 percent and 48 percent, respectively. Shipments of turboprop aircraft increased 19 percent, while turbojet aircraft deliveries declined 16 percent.

Hours Flown

Total general aviation hours flown in fiscal 1984 was 35.9 million hours, down 1.4 percent from fiscal 1983. Single engine piston aircraft accounted for 65.2 percent of all hours flown; multi-engine piston aircraft for 15.9 percent; turbine-powered aircraft for 11.1 percent; and rotorcraft for 7.0 percent. The single engine piston aircraft hours flown declined 2 percent in 1984, while turbine-powered aircraft hours increased 8.1 percent, and rotorcraft hours declined 7.4 percent. During the period 1980 through 1984, total hours flown declined at an annual rate of 3.6 percent; single engine piston aircraft hours flown declined at a rate of 5.1 percent; turbine-powered aircraft hours grew at a 4.2 percent rate; and rotorcraft hours flown increased at a rate of 1.0 percent.

In calendar 1984, personal and instructional use accounted for 36 percent of all hours flown, and business and executive use for 32 percent. In 1970, personal and instructional use accounted for over 50 percent of all hours flown, and business and executive for only 28 percent. Between 1970 and 1984, the use of general aviation for business grew at a 3 percent annual rate, while personal and instructional use declined at a rate of approximately 1 percent a year.

Pilot Population

A declining number of student and private pilots provides further evidence of general aviation's changing characteristics. As of January 1, 1985, the total pilot population was 722,376, up 0.6 percent from 1984. For the period 1980 through 1985, total active pilot population declined at a yearly rate of 2.4 percent; student pilots fell at a 6.5 percent rate; and private pilots at a 1.4 percent annual rate.

DISCUSSION OF STRUCTURAL CHANGES

An indication that fundamental changes have taken place in the industry is the failure of aircraft shipments to respond to an expanding economy. During previous economic cycles, changes in the general aviation industry have generally paralleled changes in business activity. Empirical results have shown that on the average a 1 percent increase in GNP, adjusted for price changes, will increase general aviation unit shipments by about 4.2 percent. However, since the long precipitous decline of aircraft shipments began in 1979, this expected result has not occurred. For example, in 1979 'real' GNP increased 2.8 percent, and shipments declined 4.3 percent. Again in 1981, GNP increased 2.6 percent while shipments declined 21 percent. In 1983, which was an especially good year for the economy, GNP increased 3.4 percent and unit shipments fell 37 percent. In 1984 deliveries dropped 10 percent while aggregate output of the economy increased an impressive 6.8 percent. Although 1985 has shown strong economic growth, shipments continue to fall below 1984 levels. This relatively long-run of contrary movements of production and 'real' GNP implies that other variables are outweighing the positive effects of income growth. We would not expect this persistent pattern to be due to chance alone. Factors such as the availability of low-cost alternatives for recreational flying, changes in tastes and preferences, rapidly rising prices and operating costs of conventional aircraft, and continued high, real interest rates may all be contributing to the downturn. In the following sections detailed analyses of the economic forces affecting the markets for single engine and multi-engine piston aircraft, turboprops, and turbojets are presented.

Single Engine Piston Aircraft

During the 1970's, single engine piston aircraft shipments increased at a steady rate, peaking in 1978 at 14,398 units. From 1978 through 1984 shipments continuously fell to 2,621, a yearly rate of decline of 30 percent. During this period of declining shipments, single engine piston aircraft prices increased at a yearly rate close to 12 percent. Prices, adjusted for inflation, grew at approximately 5 percent a year, which is also substantial. The largest price increases occurred from 1980 through 1984. Prices during this period increased at approximately 14 percent a year. Operating and maintenance costs, particularly operating costs, have also been rising faster than the rate of inflation. From 1979 through 1983 fuel prices significantly increased due to the run up in OPEC oil prices in 1979. Although crude oil prices have been declining during the past few years, aviation gasoline and general aviation jet fuel prices have not followed along. These prices remain at relatively high levels. The failure of aviation gasoline prices to decline during the past few years could be due to a combination of rising production costs and the desire of fixed-base operators to maintain income levels in a shrinking market. Revenue from gasoline markups is generally used to pay for other services provided by the fixed-base operator. When the amount of fuel sold decreases, the markup per gallon has to increase to pay these other costs.

In analyzing the relationship between single engine piston aircraft shipments and cost and income variables, it was determined that relatively small changes in the costs of buying and maintaining aircraft will significantly reduce shipments. Specifically, the results of our analyses showed the following:

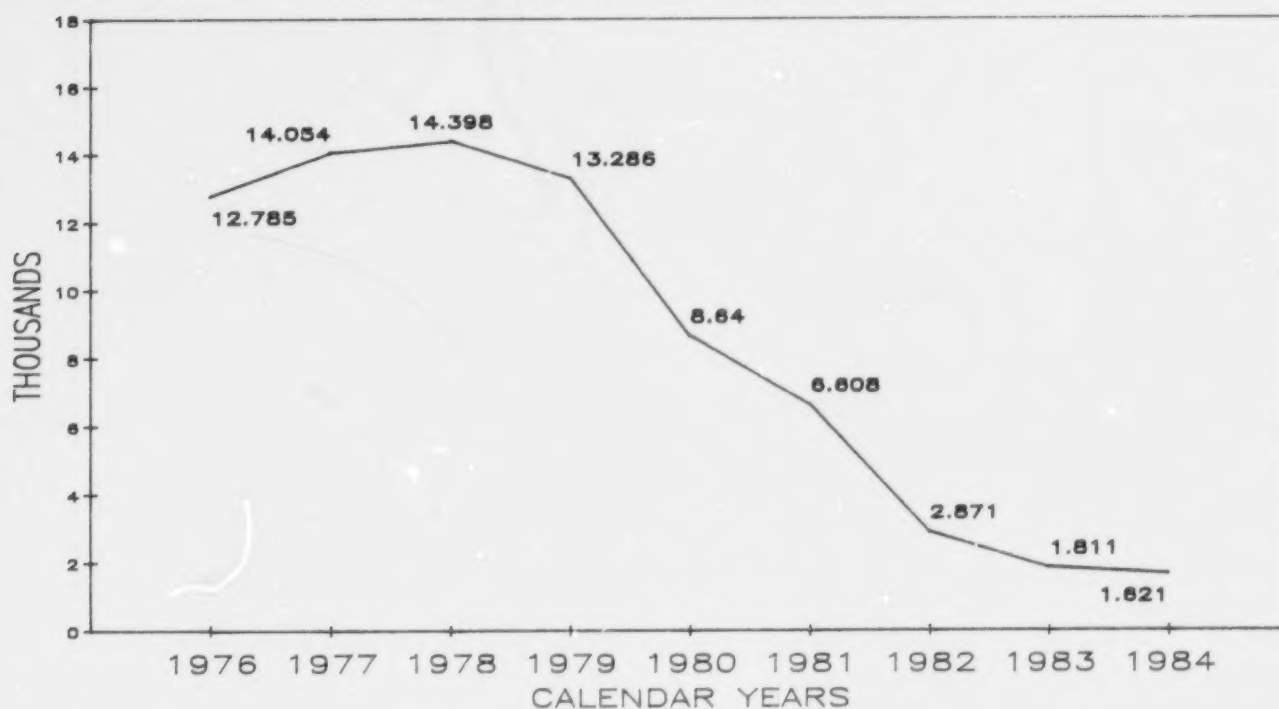
1. One percent increase in prices, adjusted for inflation, reduced shipments 8.08 percent;
2. One percent increase in operating and maintenance costs, adjusted for price changes, reduced shipments 5.82 percent;
3. One percent increase in GNP, adjusted for price changes, increased shipments 6.76 percent.

Multi-Engine Piston Aircraft

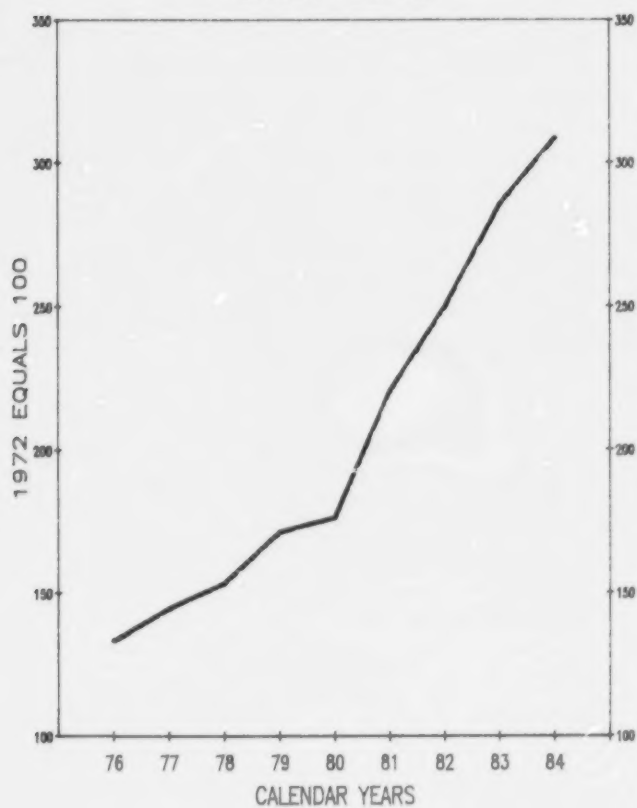
Shipments of multi-engine piston aircraft have followed a pattern similar to that of single engine piston aircraft. Shipments were strong throughout the 1970's, peaking in 1979 at 2,843 units. The average number of units shipped annually between 1970 and 1979 was 2,020. In 1984 only 374 aircraft were shipped, a decline of 90 percent from the peak in 1979. During this period of declining shipments, annual price increases were over 12 percent. Prices, adjusted for inflation, increased at a rate close to 6 percent. The growth of operating and maintenance costs during the 1970's and 1980's was also significant. For the period 1970 through 1984 operating and maintenance costs increased at a yearly rate of 9.9 percent; costs, adjusted for inflation, increased at a rate of about 3 percent. The relative importance of operating costs and maintenance costs can be discerned by calculating independent growth rates for these two series. For the period 1970 through 1984 maintenance costs increased at a yearly rate of 7.3 percent; while operating costs, which are predominantly fuel costs, increased at a yearly rate of 11.5 percent. Clearly, the large increases in operating and maintenance costs are attributable to fuel price changes.

SINGLE ENGINE PISTON AIRCRAFT TRENDS

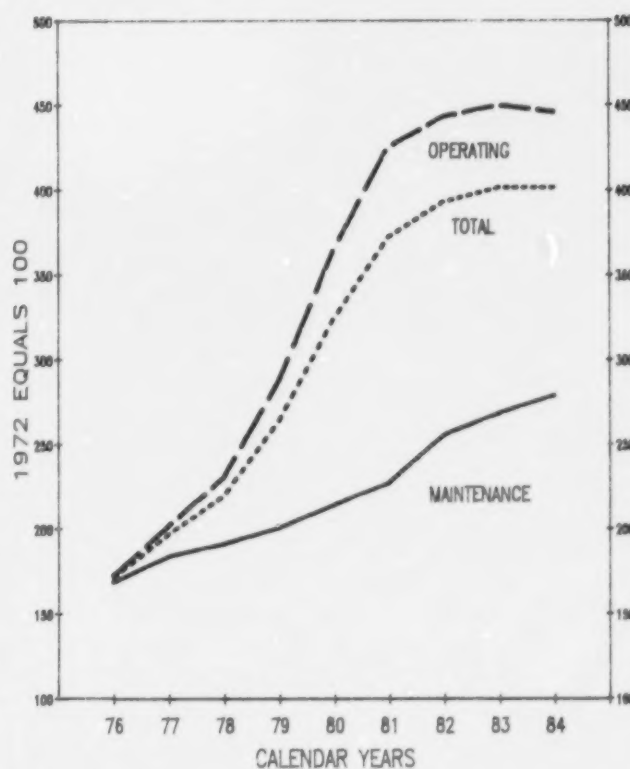
AIRCRAFT SHIPMENTS



AIRCRAFT PRICES

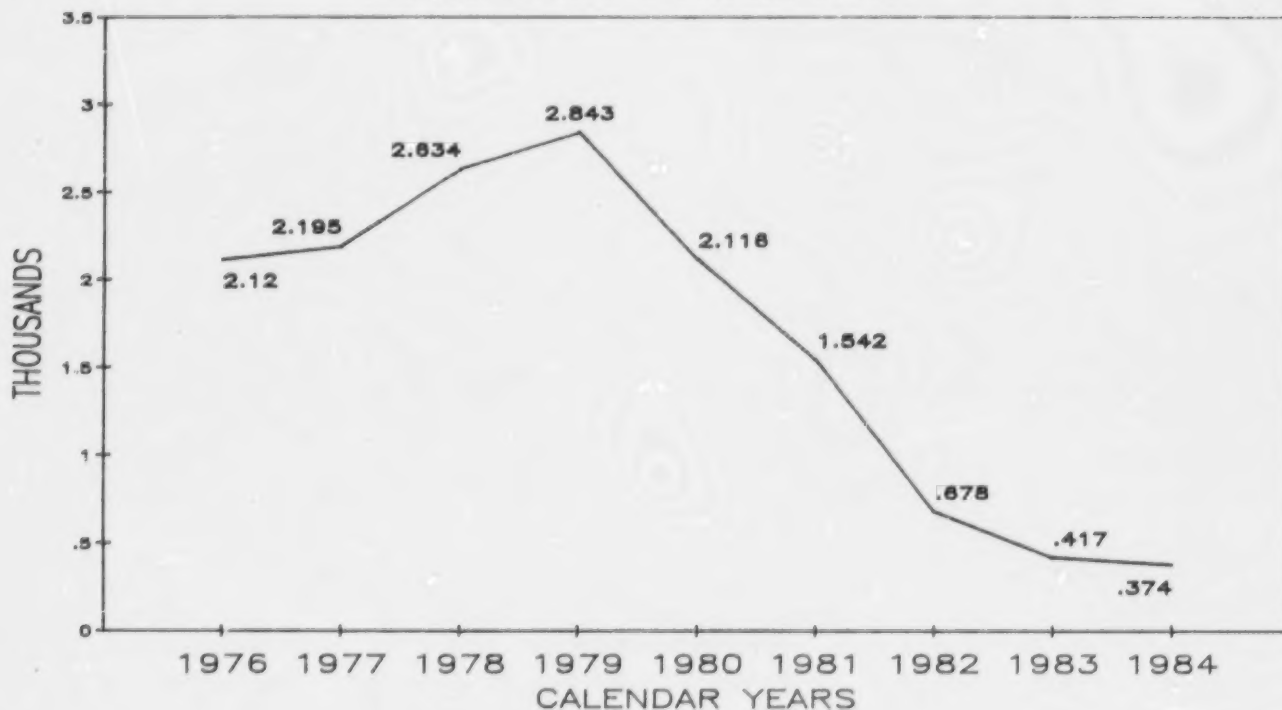


OPERATING AND MAINTENANCE COSTS/HOUR

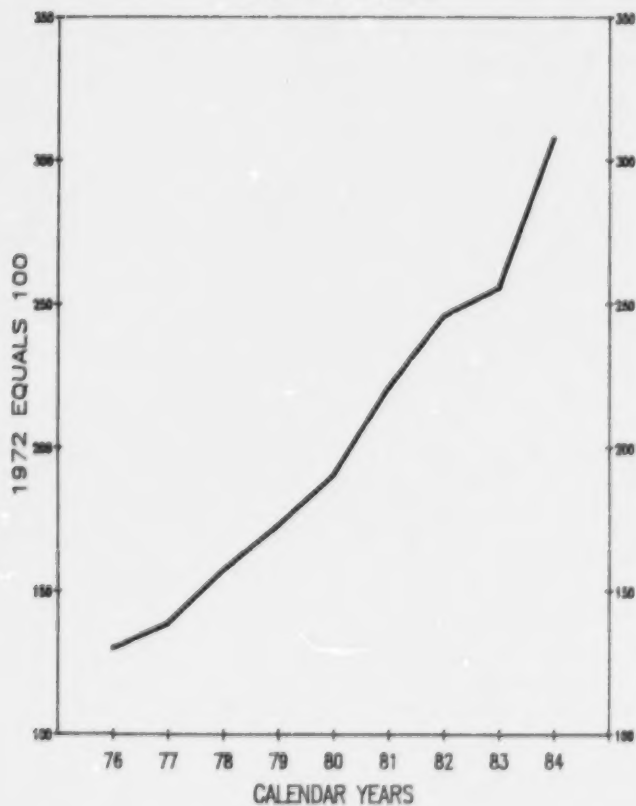


MULTI-ENGINE PISTON AIRCRAFT TRENDS

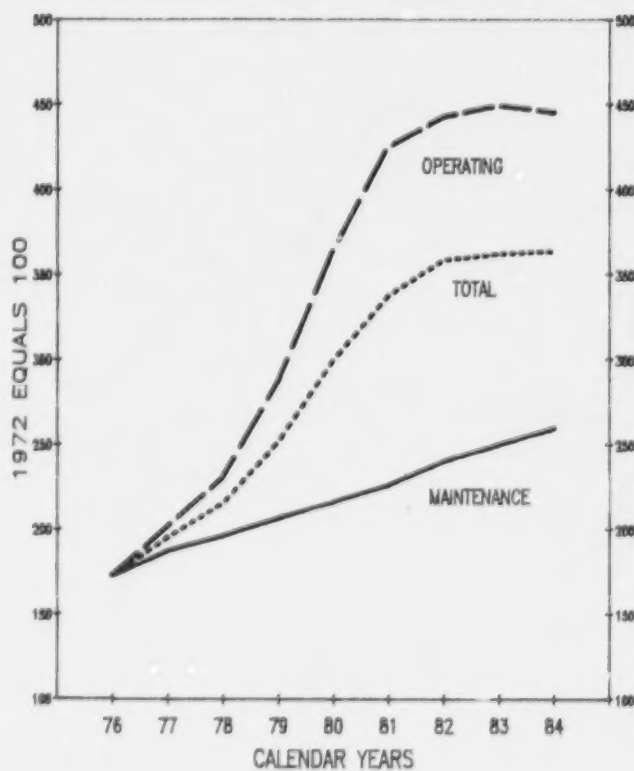
AIRCRAFT SHIPMENTS



AIRCRAFT PRICES



OPERATING AND MAINTENANCE COSTS/HOUR



After experimenting with a wide range of economic variables which were assumed to affect the multi-engine piston market, we arrived at the following :

1. One percent increase in interest rates, adjusted for price changes, reduced shipments 0.32 percent;
2. One percent increase in GNP, adjusted for price changes, increased shipments 4.57 percent;
3. One percent increase in prices, adjusted for inflation, reduced shipments 5.57 percent;
4. One percent increase in operating and maintenance costs, adjusted for price changes, reduced shipments 0.55 percent.

From the results presented above it is clear that the two most important variables affecting shipments of multi-engine piston aircraft are prices and the state of the economy. Interest rates and operating and maintenance costs are statistically significant, but the effects of changes in these variables on shipments are relatively small.

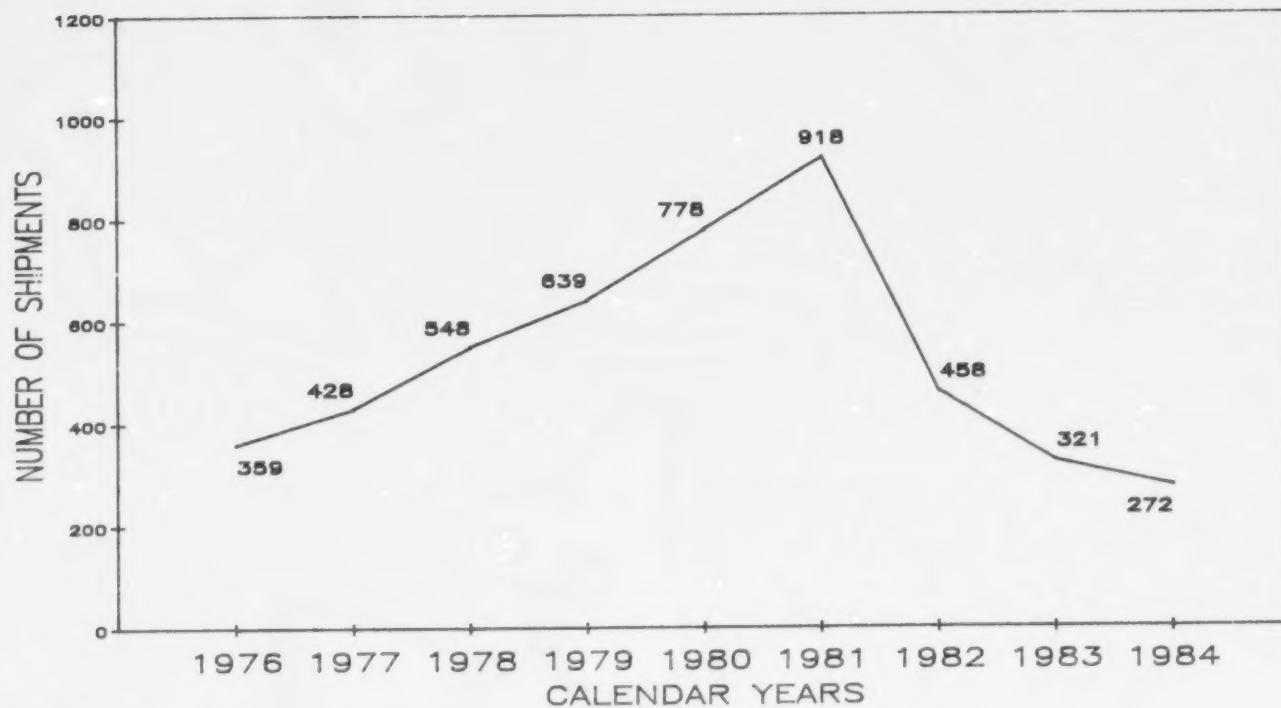
Turboprop Aircraft

The piston market has not been the only segment of general aviation that has been experiencing a protracted recessionary period. The demand for the larger, more sophisticated aircraft by business, which was expected to be strong throughout the 1980's, has been relatively weak for the past 5 years. The expectations for sustained, strong growth were formed during the 1970's when shipments of turboprop aircraft were expanding at an exceptional rate. In 1971, 89 turboprop units were shipped. Shipments continued increasing throughout the 1970's, reaching a maximum of 918 units in 1981. The average yearly growth rate of shipments during this period was 26 percent. The rapid decline of shipments began in 1982. Deliveries reached a level of only 272 units in 1984, approximately equal to the number of units shipped in 1974. Between 1979 and 1984 prices accelerated, increasing at an annual rate of 10 percent. Prices, adjusted for inflation, increased at a 3 percent yearly rate. Operating and maintenance costs also showed large increases during the latter part of the 1970's and early 1980's. Again, the empirical analyses indicated that aircraft prices and national income are the major factors affecting the demand for aircraft. The results of the analyses are the following:

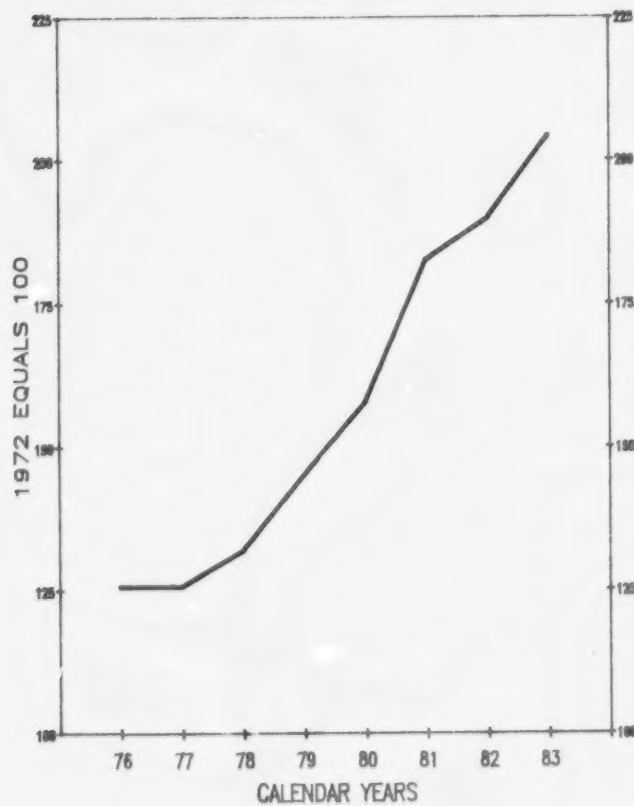
1. One percent increase in prices, adjusted for inflation, reduced shipments 2.76 percent;
2. One percent increase in gross national product, adjusted for price changes, increased shipments 4.73;
3. One percent increase in interest rates, adjusted for price changes, reduced shipments 0.12 percent.

TURBOPROP AIRCRAFT TRENDS

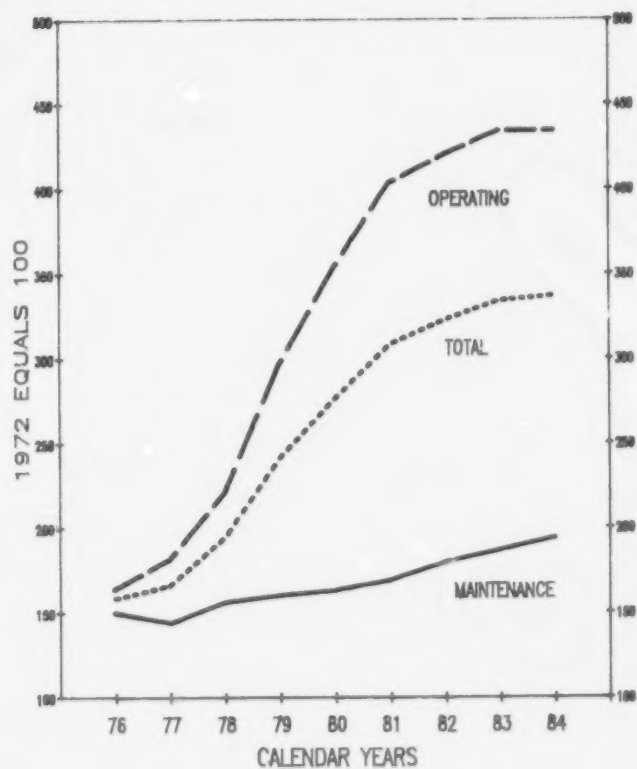
AIRCRAFT SHIPMENTS



AIRCRAFT PRICES



OPERATING AND MAINTENANCE COSTS/HOUR



Turbojet Aircraft

Shipments of turbojet aircraft were 47 in 1971, reached a maximum of 389 in 1981, then fell to 171 in 1984. This pattern is similar to that for the turboprop aircraft, rapidly increasing shipments during the 1970's, followed by a steep decline in the 1980's. During the growth period, shipments were increasing at an annual rate of over 24 percent. During the period of decline, shipments fell at an annual rate of approximately 24 percent. From 1979 through 1984 prices increased at a yearly rate of 9.8 percent. Prices, adjusted for inflation, increased at a rate of 3.1 percent. Operating and maintenance cost movements paralleled those of the other aircraft previously discussed, increasing rapidly during the latter part of the 1970's and early 1980's, and then stabilizing at relatively high levels. The results from analyzing 15 years of historical data are the following:

1. One percent increase in prices, adjusted for inflation, reduced shipments 3.19 percent;
2. One percent increase in GNP, adjusted for price changes, increased shipments 5.44 percent.

Exports

Foreign sales have also weakened during the past several years. Exports dropped from 3,995 units in 1979 to 336 in 1984, a yearly rate of decline of approximately 40 percent. Further, net billings from exports declined from \$756.4 million in 1980 to \$261 million in 1984. The analyses has shown that prices of aircraft, the exchange rate, and world GNP explain a large percentage of the variability in exports. In addition, the analyses indicated that relatively small increases in prices and the exchange rate will have a large, negative impact on exports. The estimated relationships among the variables are the following:

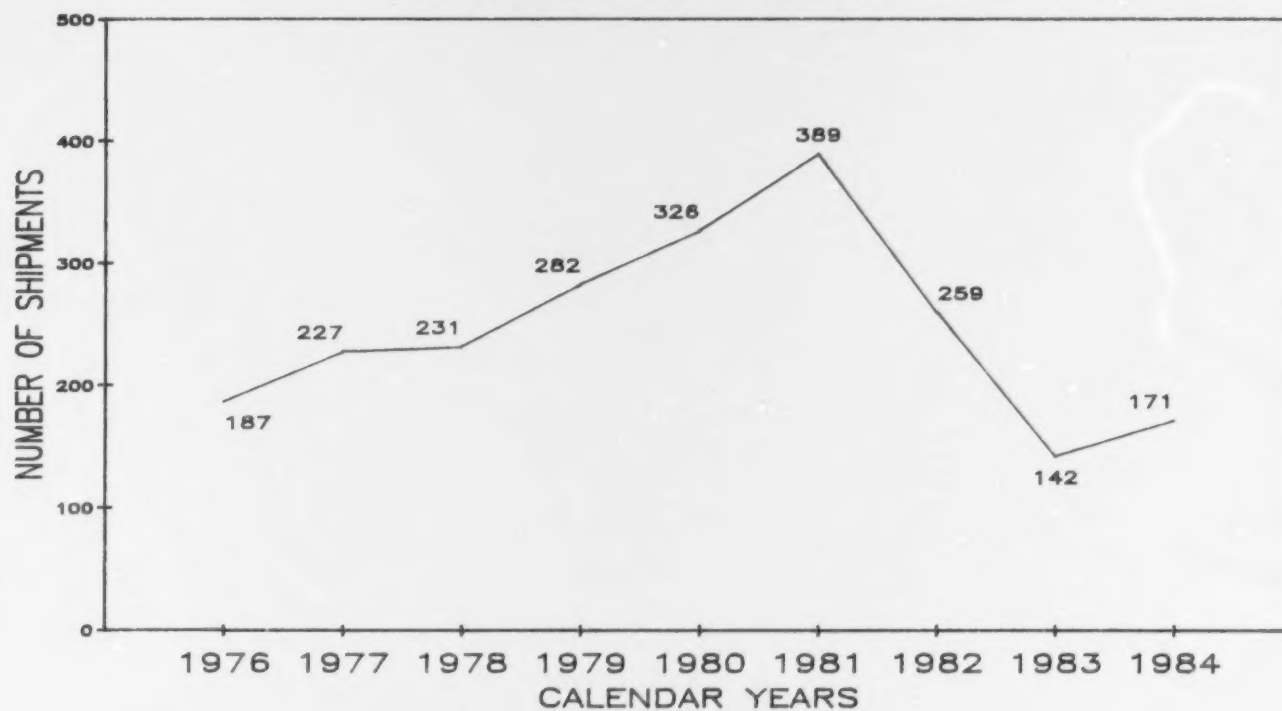
1. One percent increase in prices, adjusted for inflation, reduced exports 3.7 percent;
2. One percent increase in the exchange rate reduced exports 4.4 percent;
3. One percent increase in world GNP, adjusted for price changes, increased exports 0.21 percent.

Aircraft Price Analyses

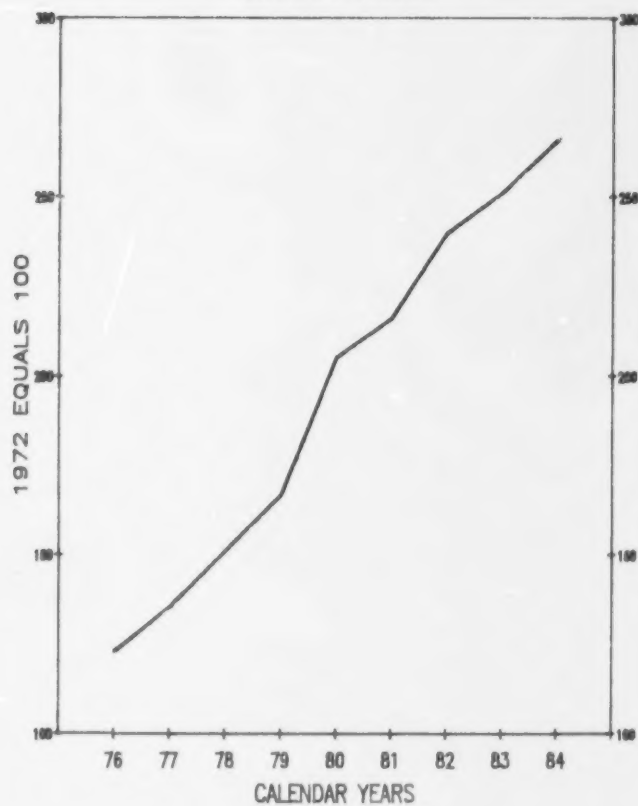
The analyses just presented has shown that accelerating aircraft prices and operating and maintenance costs during the latter part of the 1970's and throughout the 1980's has had a dampening affect on domestic and international sales. We do have some insights into the reasons for the continued high operating costs. It was pointed out earlier that fuel prices have not declined along with crude oil prices because of rising production costs and the desire of fixed-base operators to maintain income levels in a shrinking market. In analyzing the underlying causes of price increases, however, we could only make inferences from a very limited data base. Data on the costs of aircraft production are unavailable. A breakdown of the costs of production over a relatively long time period is essential for isolating the factors that have been responsible for the recent escalation of prices.

TURBOJET AIRCRAFT TRENDS

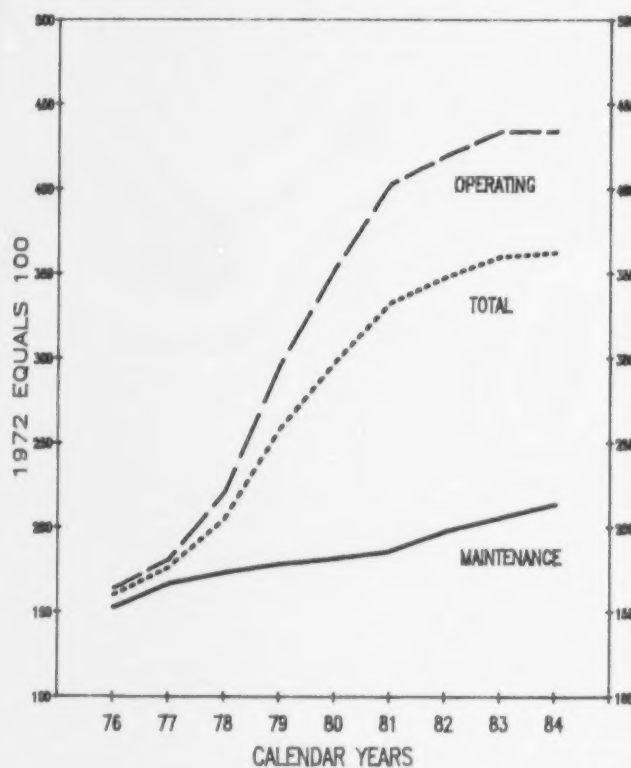
AIRCRAFT SHIPMENTS



AIRCRAFT PRICES



OPERATING AND MAINTENANCE COSTS/HOUR



To determine if rising labor costs have been responsible for price increases, we compared the growth rate of wage rates of fabricated metal workers with the growth rate of prices for the period 1972 through 1984. Prior to the period of accelerating prices, wages and prices were highly correlated. Further, prices were increasing at a slower rate than wages. In general, a 1 percent increase in the wage rate resulted in a price increase of less than 1 percent. These results imply that during this period productivity in the industry was increasing. When aircraft prices began to accelerate, wage rates also continued to increase but at a much slower rate. The reversal of the growth rates of wages and prices suggests that factors such as rising product liability costs, increasing avionics costs, declining productivity, and industry pricing policies may be responsible for the recent escalation of prices. For example, between 1972 and 1977 single-engine piston aircraft prices increased at a yearly rate of 7.6 percent while wages increased at a yearly rate of 9.1 percent. During the period 1977 through 1984, prices grew at a yearly rate of 11.4 percent while wages grew at an annual rate of only 8.4 percent.

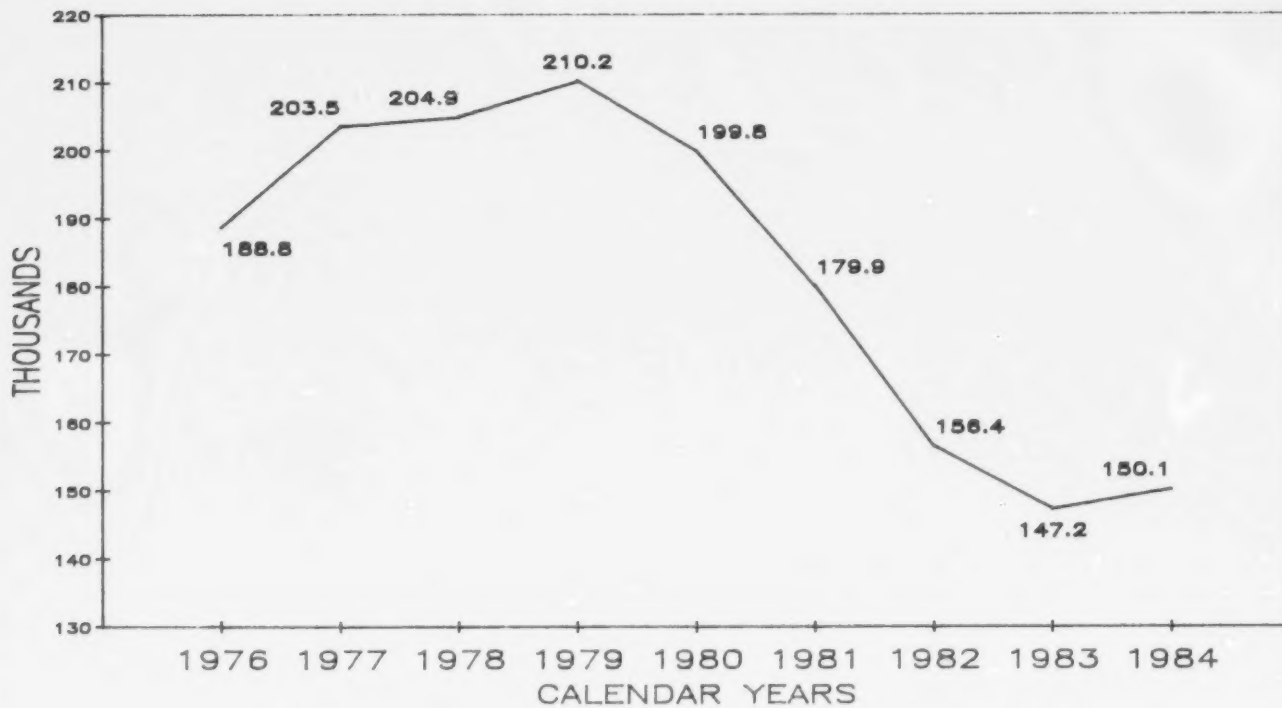
To assess the relationship between aircraft prices and avionics prices a time series of prices for four types of equipment were compared with aircraft prices. Between 1974 and 1979, avionics prices generally increased at slower rates than aircraft prices. However, during the 1980's avionics prices have been increasing at relatively faster rates. For example, for the period 1974 through 1979, general aviation aircraft prices increased at an average annual rate of 9.7 percent while very high frequency (VHF) navigation equipment prices increased at a 1.9 percent rate. Between 1979 and 1984, aircraft prices increased at a yearly rate of 11.9 percent, while VHF navigation equipment prices increase at an annual rate of 17.3 percent.

Pilot Trends

A continuing decline in the number of student and private pilots provides further evidence that structural changes are occurring in general aviation. These trends will also contribute to the slowing of activity at FAA facilities. For the period 1979 through 1984, the number of student pilots fell from 210,000 to 150,400, a decline of 7 percent a year. During the 1960's and 1970's, the number of student pilots generally followed changes in economic activity. This pattern, however, has not occurred in the 1980's. Periods of robust economic growth have not been accompanied by a resurgence of pilot training. Rapidly rising training costs, aircraft prices, and operating and maintenance costs are partly responsible for this phenomenon. We may also be experiencing a fundamental change in the tastes and preferences of consumers for flying. In the long-term, this could have a far greater impact on the market than the real growth of aircraft prices and operating costs. A declining population of students and an accelerating attrition rate of private pilots have reduced the total number of private pilots over the last 4 years. From 1980 to 1984, the total number of active private pilots fell from 357,479 to 320,100, a yearly rate of decline of about 3 percent. Although the downward trends in the pilot populations are expected to turn around in the next few years, slow growth is anticipated for the forecast period.

ACTIVE PILOT TRENDS

ACTIVE STUDENT PILOTS



ACTIVE PRIVATE PILOTS



AIRCRAFT PRICES AND WAGE RATES
AVERAGE YEARLY GROWTH RATES

<u>Aircraft Type</u>	<u>Yearly Growth Rates (Percent)</u>	
<u>Single-Engine Piston Aircraft</u>	<u>1972-1977</u>	<u>1977-1984</u>
Prices	7.6	11.4
Wage Rates	9.1	8.4
<u>Multi-Engine Piston Aircraft</u>	<u>1972-1979</u>	<u>1979-1984</u>
Prices	8.2	12.2
Wage Rates	8.6	7.2
<u>Turboprop Aircraft</u>	<u>1972-1980</u>	<u>1980-1983</u>
Prices	5.2	8.9
Wage Rates	9.2	8.1
<u>Turbojet Aircraft</u>	<u>1972-1979</u>	<u>1979-1984</u>
Prices	7.6	9.8
Wage Rates	8.9	8.3

AIRCRAFT AND AVIONICS PRICES
AVERAGE YEARLY GROWTH RATES

<u>Aircraft and Avionics</u>	<u>Yearly Growth Rates (Percent)</u>	
	<u>1974-1979</u>	<u>1979-1984</u>
General Aviation Aircraft Prices	9.7	11.9
VHF Navigation Equipment Prices	1.9	17.3
VHF Communications Equipment Prices	1.0	17.4
Transponder Prices	9.2	12.2
Distance Measuring Equipment Prices	2.2	11.3

GENERAL AVIATION FORECASTS

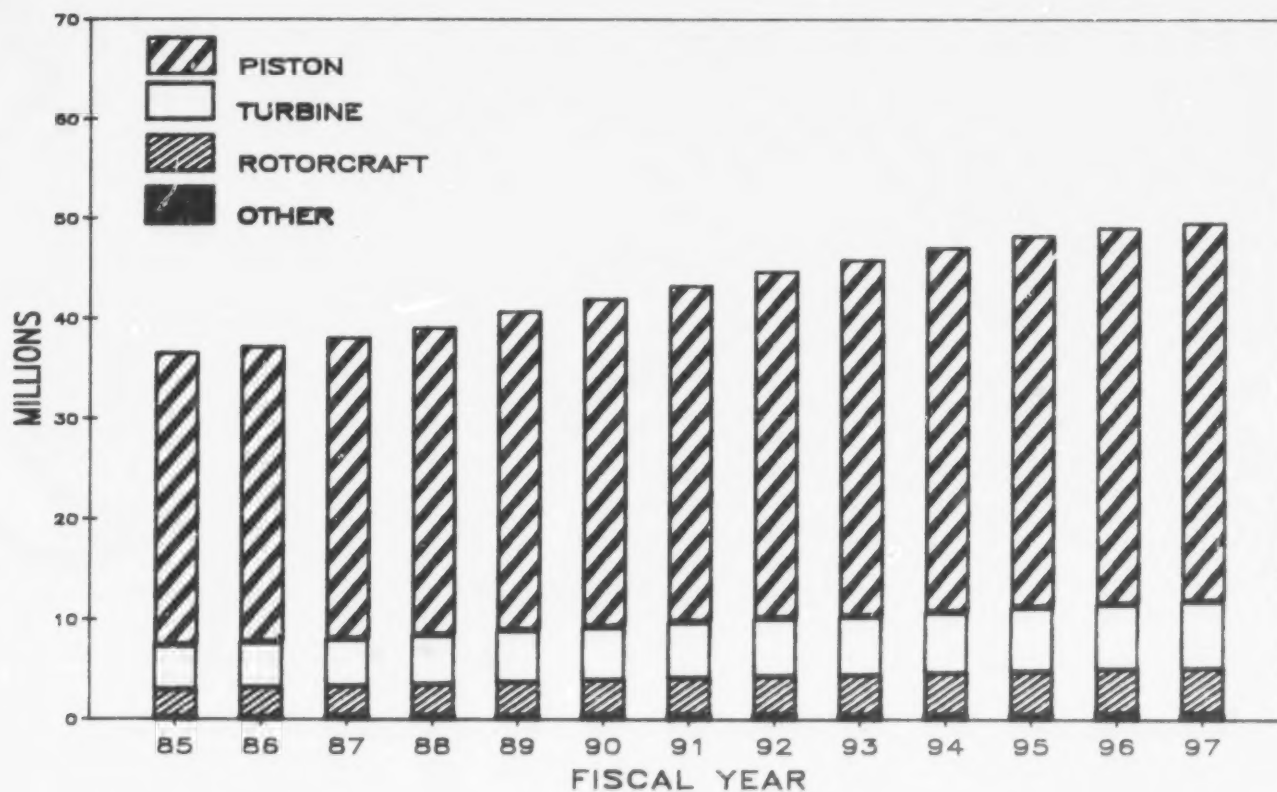
Hours Flown

Growth over the entire forecast period for general aviation hours is expected to average 2.6 percent a year, resulting in an estimated 49.6 million hours flown in 1997. During the 1960's and 1970's, the average annual growth rate of hours flown was about 6 percent. Single engine piston aircraft hours flown is forecast to grow 2.4 percent a year. Turbine-powered aircraft hours flown is projected to increase from 4.4 million in 1985 to 6.7 million in 1997, growing at the rate of 3.6 percent a year. Turbine rotorcraft hours flown is expected to increase at a yearly rate of 5.7 percent.

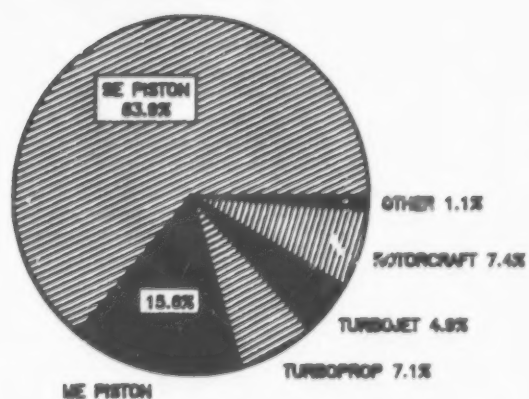
Fleet

The industry will experience a continuation of slow growth in the general aviation fleet. The population of active aircraft is forecast to increase 1.4 percent a year between 1985 and 1997. Active single engine piston aircraft is forecast to grow at an annual rate of only 0.9 percent. The number of turbine-powered aircraft is projected to increase from 10,129 in 1985 to 16,600 in 1996, growing at the rate of approximately 4.2 percent a year. The turbine rotorcraft fleet is expected to increase at a yearly rate of 3.6 percent.

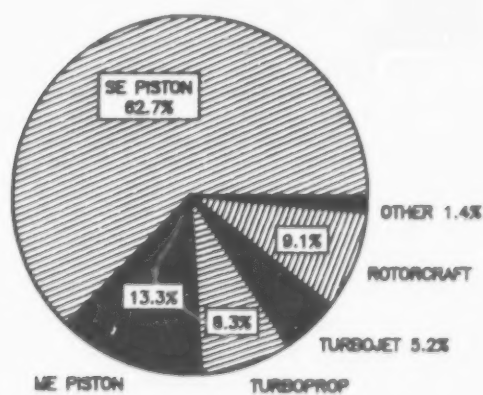
GENERAL AVIATION HOURS FLOWN



PERCENT BY AIRCRAFT TYPE

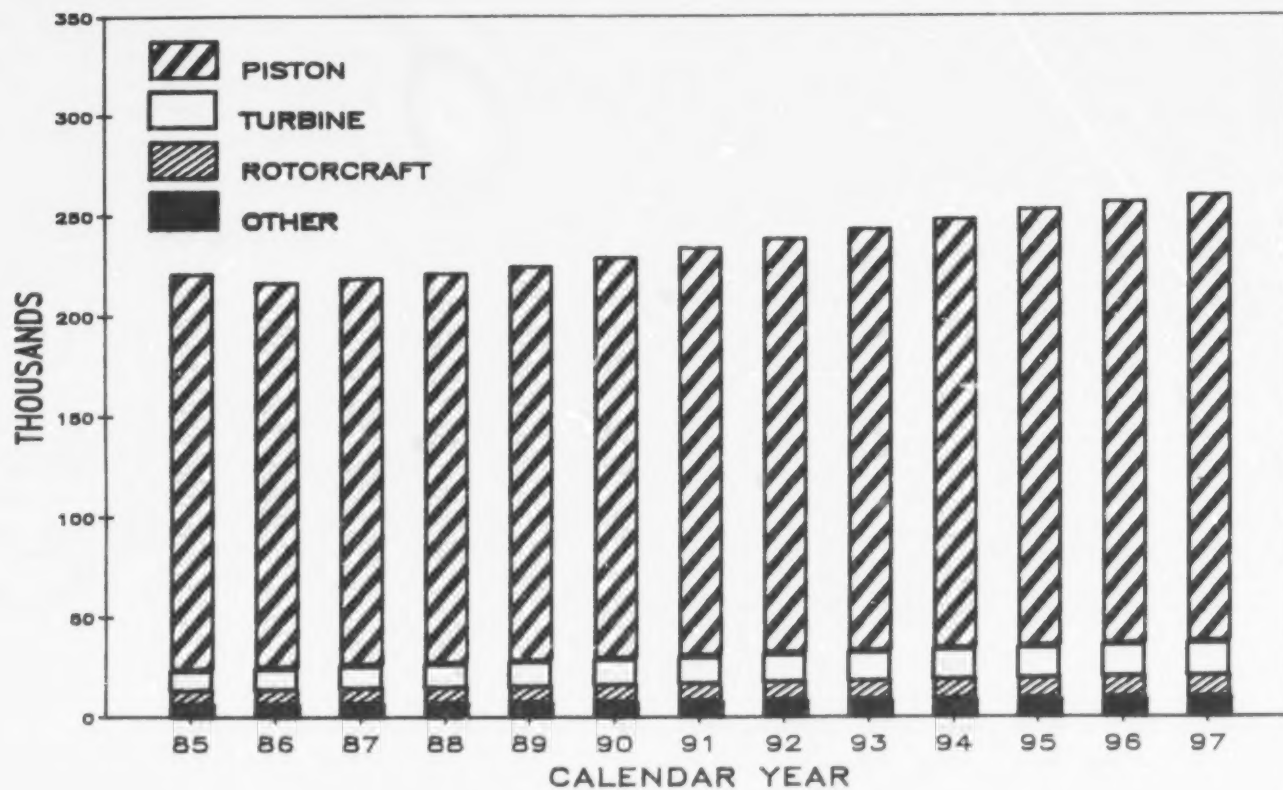


1985

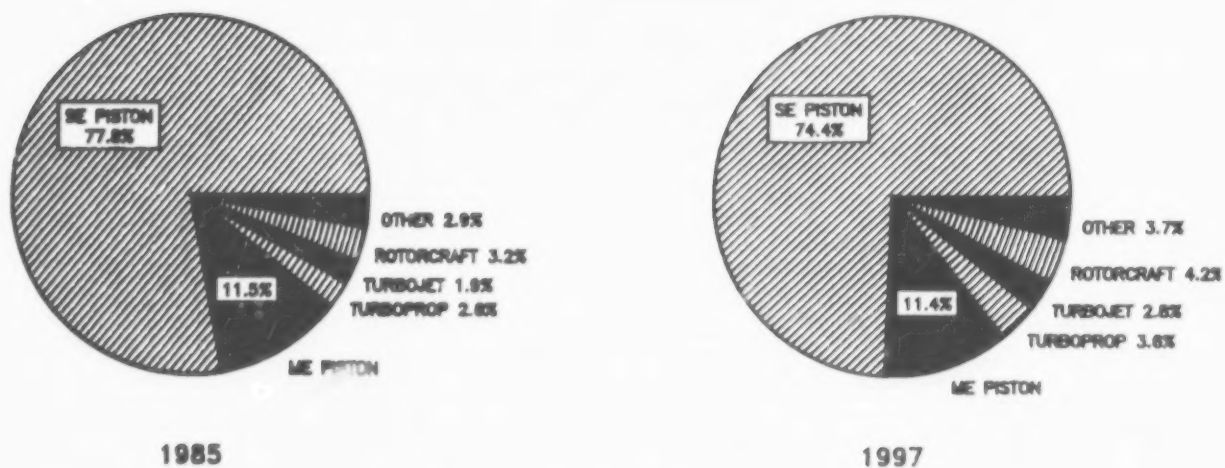


1997

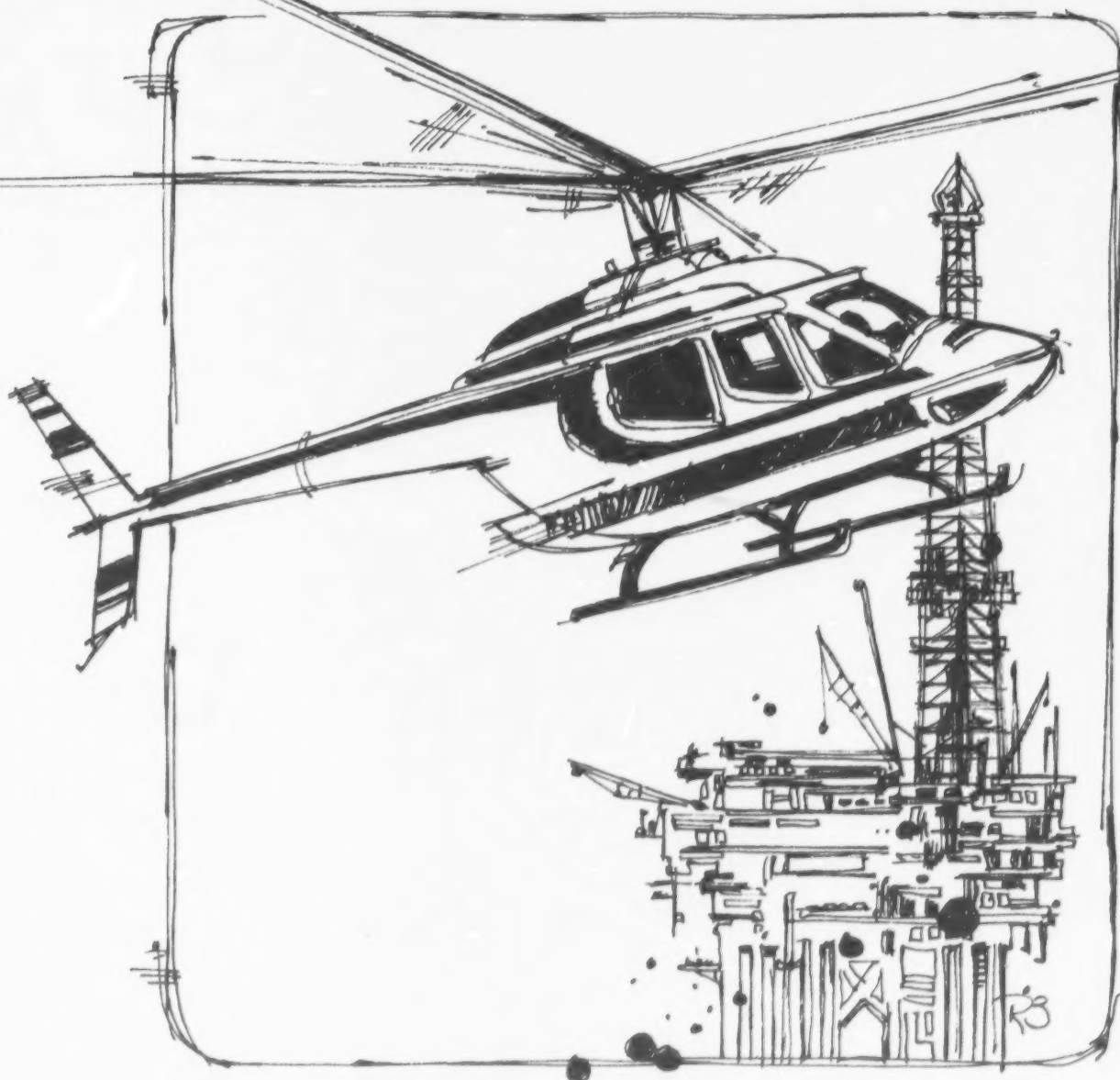
ACTIVE GENERAL AVIATION AIRCRAFT



PERCENT BY AIRCRAFT TYPE



CHAPTER VI HELICOPTERS



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Chapter VI

Helicopters

REVIEW OF 1985

Shipments

Preliminary data for calendar year 1985 indicate that shipments of U.S. civil helicopters will total 339, a 10 percent decrease from the level of 376 helicopters shipped in 1984. The value of the 1985 shipments equals \$371 million compared with \$330 million in 1984, a 12 percent increase. Exports of civil helicopters fell to \$206 million; imports totaled \$43 million. Accordingly, production for export in the helicopter industry made a net contribution of \$163 million in reducing the balance of trade, \$20 million less than the contribution made in 1984 (\$183 million). Helicopter shipments have declined considerably since the 1980 level of 1,366 aircraft. Recovery in the industry tends to lag behind the expansion phase in the national economy. Thus, the lackluster performance observed in the helicopter industry in 1984 persisted in 1985, also. Key factors responsible for the relatively depressed state of the industry include low levels of offshore oil operations, inherently high operating costs, and failure of helicopter airlines to penetrate passenger markets. Preliminary estimates suggest that the helicopter industry will begin its recovery phase in 1986.

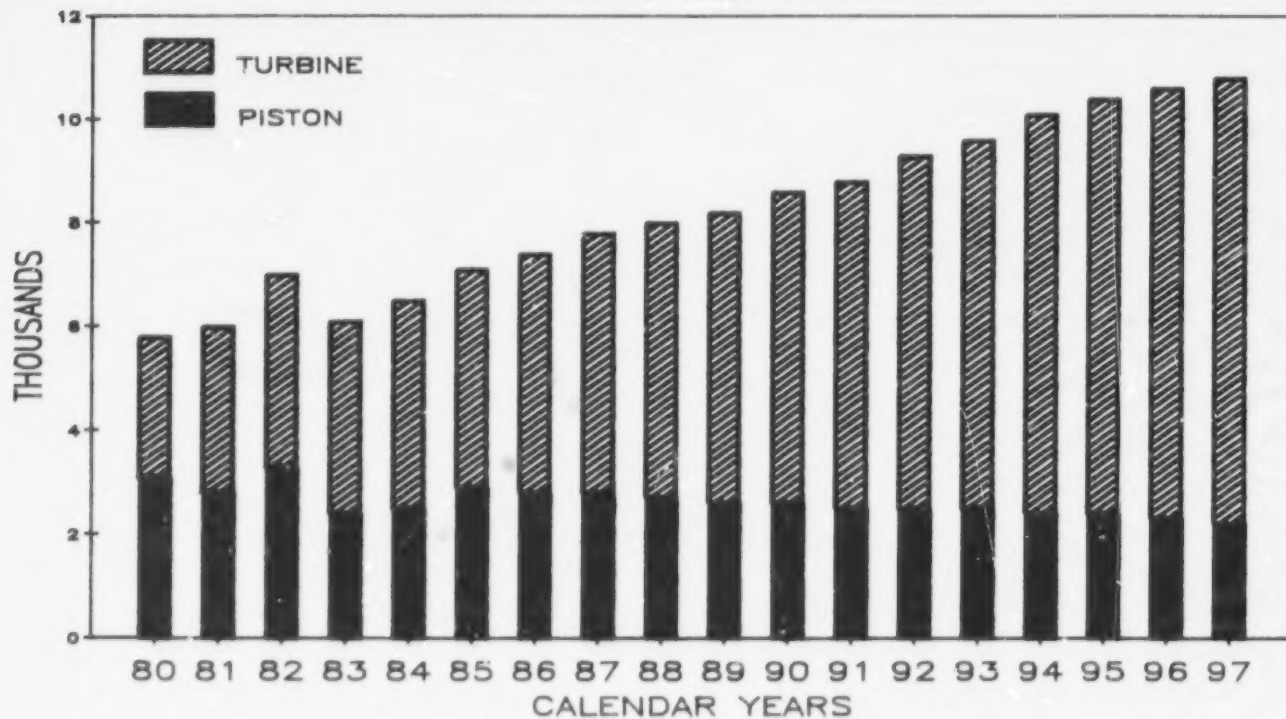
Fleet and Hours Flown

As of January 1, 1985, there were approximately 7,100 active civil rotorcraft in the U.S., up 9.2 percent from 6,500 in January 1984. The number of turbine helicopters reached 4,200 in 1985, about 59 percent of the active fleet. This portion of the fleet has grown about 56 percent since 1980. By comparison, the number of active piston-powered rotorcraft (2,900) is lower than the 1980 number. Although the number of piston-powered helicopters increased in 1984 and 1985, the number has not climbed to the peak of 3,300 observed in 1982.

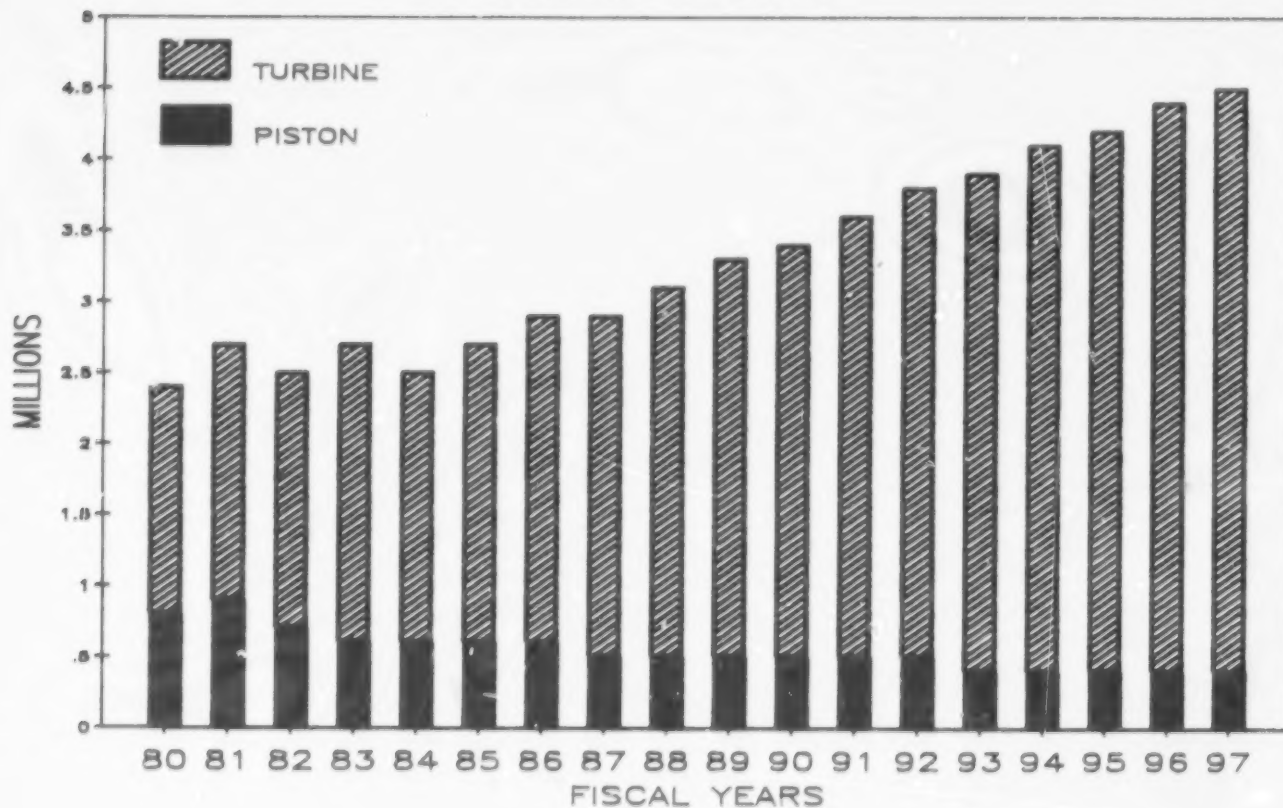
Rotorcraft flew an estimated 2.7 million hours in 1985. Turbine-powered rotorcraft flew 2.1 million hours, 78 percent of the total number of hours flown. Since 1980, hours flown in turbine-powered rotorcraft have grown relative to those of piston-powered rotorcraft. In 1980, turbine-powered rotorcraft hours flown accounted for 66.7 percent of all rotorcraft hours flown.

ROTORCRAFT FLEET AND HOURS FLOWN

ACTIVE AIRCRAFT



HOURS FLOWN



HELICOPTER FORECASTS

The forecasts of rotorcraft fleet and hours flown presented in this section were derived from the output of econometric models developed for the FAA and presented in a report concluded in November 1983. The results were adjusted to account for recent benchmark data for calendar year 1984.

Fleet and Hours Flown

The rotorcraft fleet is expected to reach 10,800 in 1997, an annual average increase of 3.6 percent over the 1985 level. In 1997, the turbine-powered fleet will more than double the 1985 number and will reach 8,600. The piston-powered fleet will decrease to 2,200 from its current level of 2,900.

The growth in the fleet will be paralleled by growth in hours flown which will reach 4.5 million in 1997. This represents an annual average growth of 4.3 percent. Similarly, hours flown by turbine-powered helicopters will nearly double, reaching a total of 4.1 million hours. In contrast, hours flown by piston-powered rotorcraft will decline by 33 percent to 400,000.

Fuel Consumed

In 1985, fuel consumed by rotorcraft totaled 81.2 million gallons. By 1997, fuel consumed will increase to 147.6 million gallons, an average annual increase of 5.1 percent. Over 96 percent of the fuel consumed in 1997 will be used by turbine-powered rotorcraft compared with nearly 90 percent in 1985.

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CHAPTER VII

FAA WORKLOAD MEASURES



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Chapter VII

FAA Workload Measures

The FAA provides the aviation community with three operational services: air traffic control at selected airports, traffic surveillance and aircraft separation by Air Route Traffic Control Centers, and flight planning and pilot briefings at the Flight Service Stations. All four aviation user-groups -- air carriers, commuter/air taxis, general aviation, and military -- utilize these operational services to enhance aviation traffic safety.

Multiple indicators are used to describe the total FAA operational workload. The four aviation user groups differ in the demands they impose on the air traffic system. Consequently, no single measure typifies past trends or future demand for these FAA services. There have been, and will continue to be, different socioeconomic forces driving the growth of each of the aviation-user categories.

REVIEW OF 1985

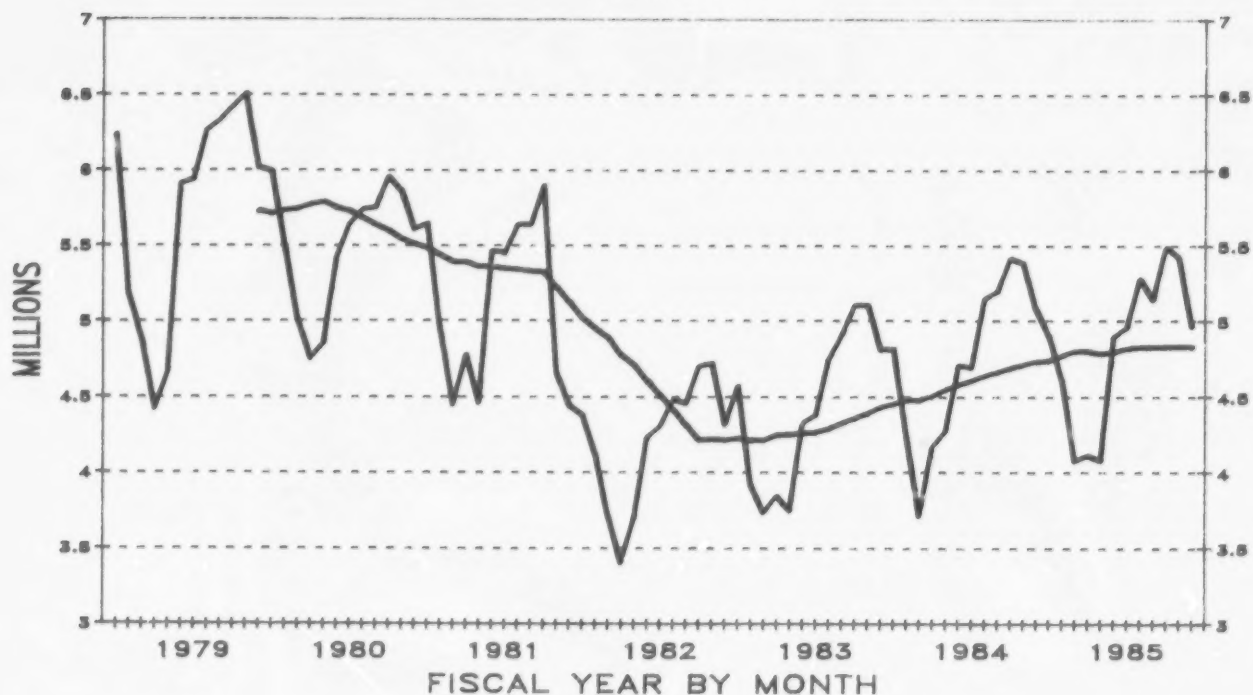
FAA Tower Activity

Aircraft activity at FAA towered airports increased 2.0 percent to 57.9 million operations in fiscal 1985, the third consecutive growth year following three straight years of declining activity. Despite this growth, tower operations still remain 9.5 percent below the level of activity achieved in the 12-month period immediately proceeding the air traffic controller's strike (hereafter referred to as the pre-strike period). In fact, most of the increase since 1982 is largely the result of the continued strong growth in the demand for commercial aviation services. Commercial activity, the sum of air carrier and commuter/air taxi operations, has increased by 28.7 percent since 1982; and 4.1 percent in 1985. Noncommercial operations, the sum of general aviation and military operations, has increased by 8.8 percent since 1982; and only 0.6 percent in 1985.

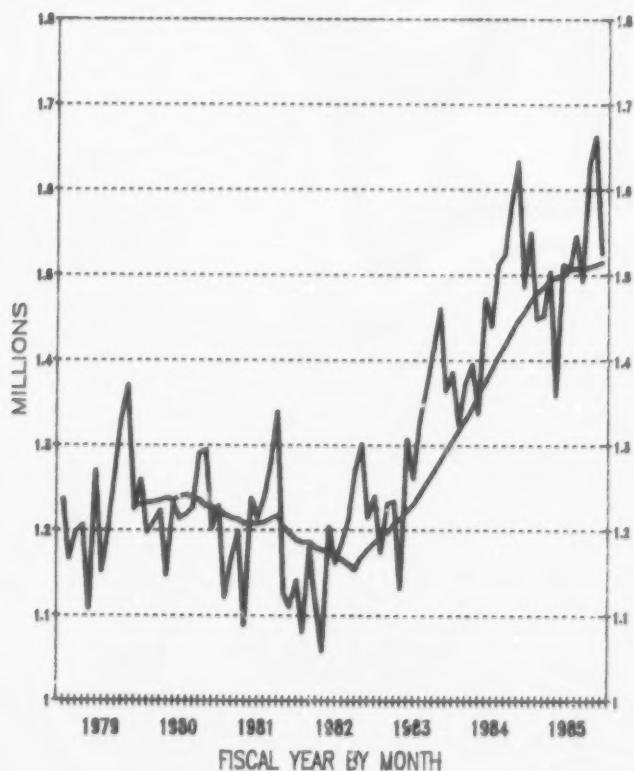
Air carrier operations at FAA towered airports totaled 11.3 million in fiscal 1985, an increase of 3.7 percent over 1984 and 24.7 above the 9 million operations attained in fiscal 1982, the first year following the air controller's strike. The growth in 1985 was achieved despite the loss of approximately 200,000 operations due to strikes at both Pan American and United Airlines. In fact, air carrier operations in 1985 surpassed the previous all-time high of 10.8 million operations recorded in fiscal 1970.

TOWERED AIRPORT OPERATIONS ACTUAL AND 12 MONTH MOVING AVERAGE

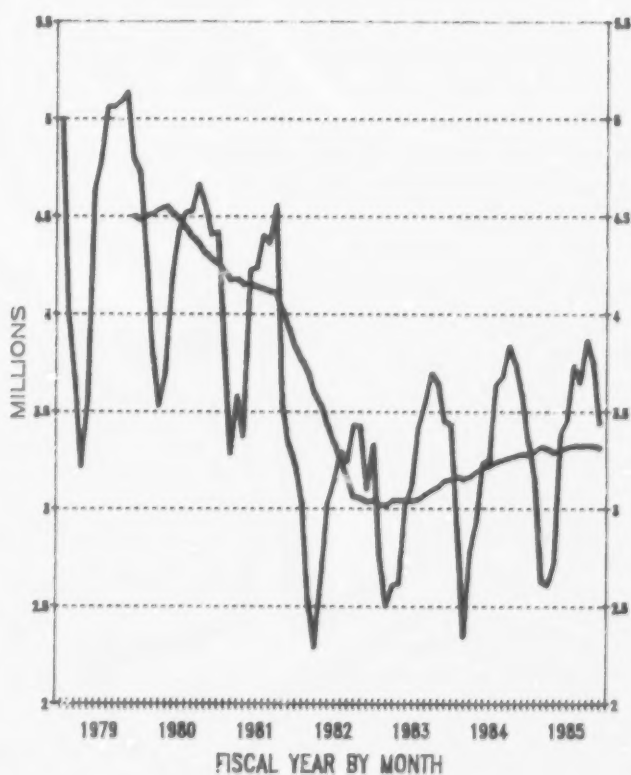
TOTAL



COMMERCIAL



NONCOMMERCIAL



Commuter/air taxi operations, the fastest growing user group over the past several years, totaled 6.9 million operations in fiscal 1985. The 4.9 percent increase in 1985 marked the thirteenth consecutive year of growth for commuters/air taxis. In fact, commuter/air taxi tower operations have shown an increase every year since the user category was first designated in fiscal 1972.

General aviation activity has, for the most part, failed to respond to the general upturn in the U.S. economy which began in 1983. The 37.2 million operations recorded in fiscal 1985, 0.9 percent above 1984 levels, equalled only 79.5 percent of the pre-strike level of operations. General aviation itinerant operations increased by 0.6 percent in 1985 to 22.4 million while local operations increased 1.4 percent to 14.8 million.

Military operations totaled 2.5 million in fiscal 1985, 3.8 percent above 1984 levels. Itinerant military operations accounted for 1.3 million of the total, and local military operations for 1.2 million.

Instrument Operations

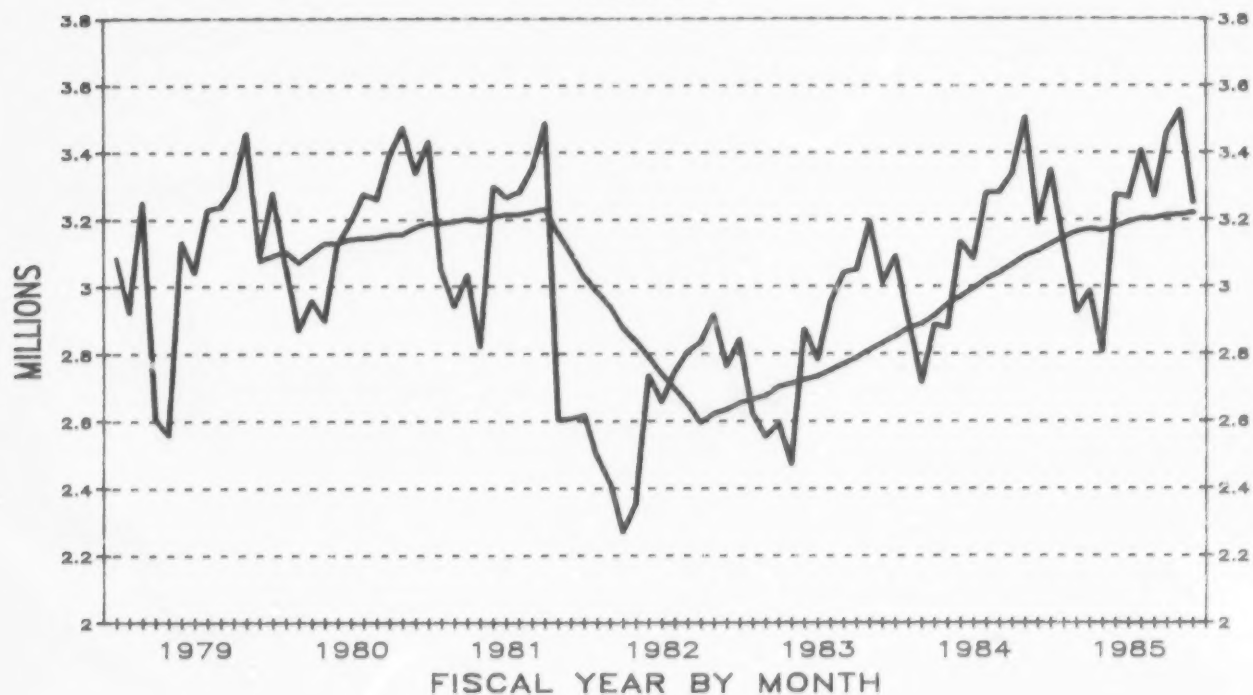
Instrument operations handled at FAA towers totaled 38.7 million in fiscal 1985, 3.7 percent above 1984 levels and only 0.4 percent below the level of activity recorded in the pre-strike 1981 period. Instrument operations performed by commercial carriers increased by 4.7 percent in 1985, with commuters/air taxis leading all user groups with a 6.6 percent increase. Air carrier instrument operations increased by 3.7 percent, but the count was impacted by the Pan American and United Airline strikes. General aviation and military instrument operations registered increases of 2.6 percent and 4.0 percent, respectively, in fiscal 1985.

Center Activity

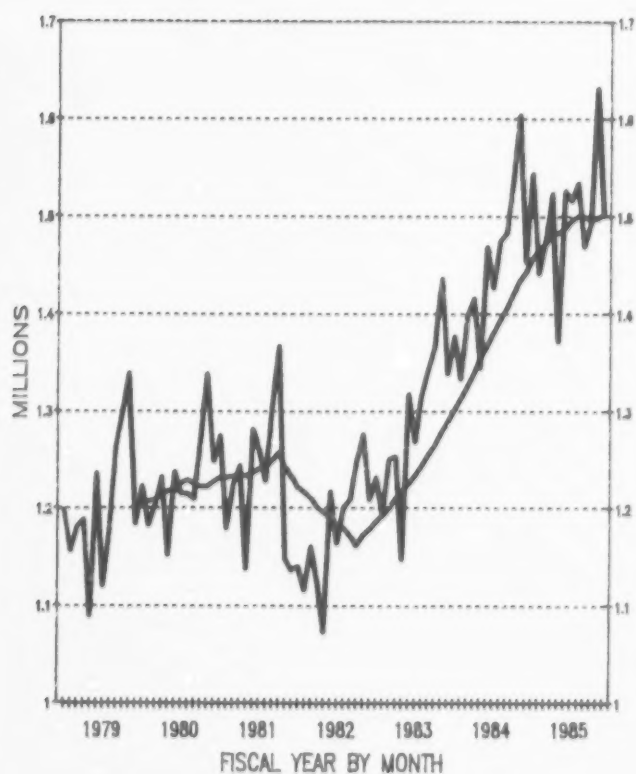
In fiscal 1985, the number of aircraft flying under instrument rules handled by Air Traffic Control Center's personnel totaled 32.7 million, an increase of 3.5 percent over the 1984 level of activity. As was the case with activity at FAA towered airports, most of the increase at the Centers can be attributed to the growth in commercial aviation activity. Commercial aircraft handled at the Centers increased by 5.1 percent compared with an increase of only 1.2 percent in noncommercial aircraft handled. Of course, the increasing sophistication of commuter/air taxi and general aviation aircraft and pilots also contribute to the increase in Center activity. The number of commuter/air taxi aircraft handled increased by 9.8 percent and the number of air carrier aircraft handled increased by 3.7 percent, although the air carrier growth was limited by the Pan American and United Airline strikes. Military aircraft handled increased by 1.8 percent in fiscal 1985 while the number of general aviation aircraft handled increased only by 0.8 percent.

INSTRUMENT OPERATIONS ACTUAL AND 12 MONTH MOVING AVERAGE

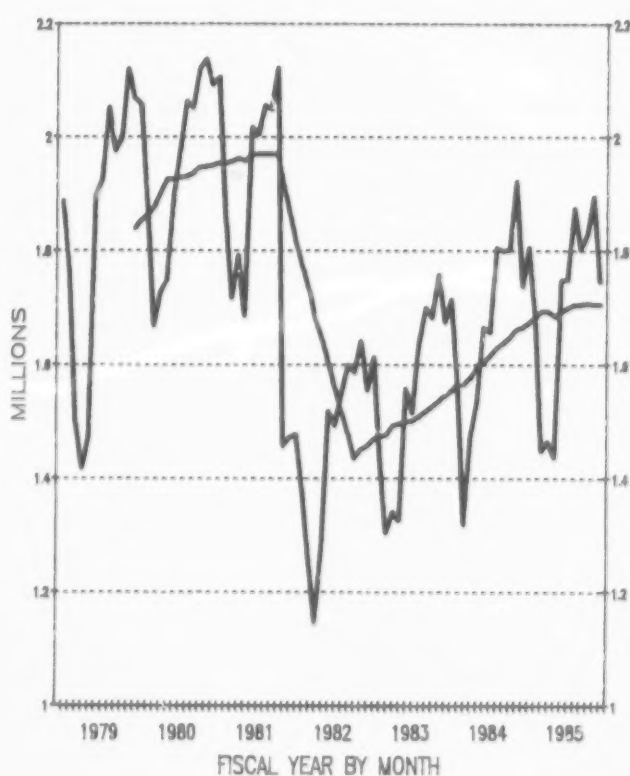
TOTAL



COMMERCIAL



NONCOMMERCIAL

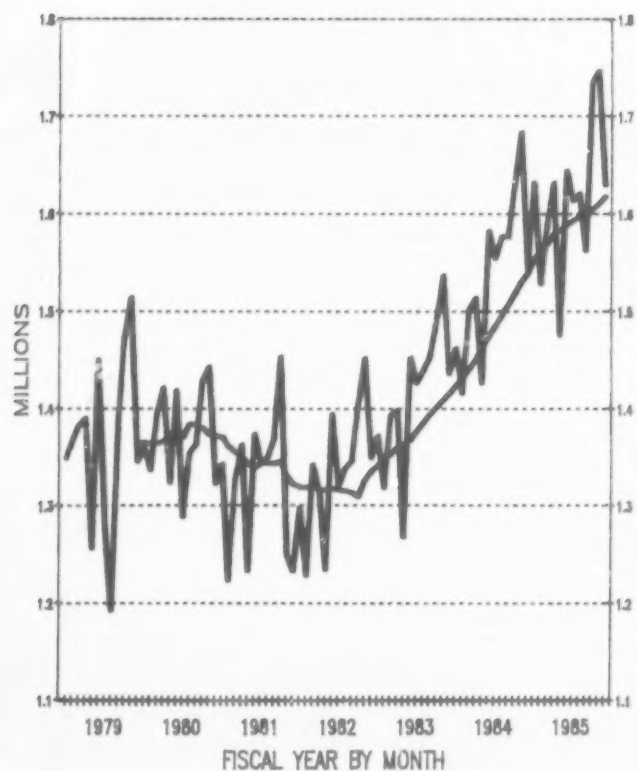


AIRCRAFT HANDLED ACTUAL AND 12 MONTH MOVING AVERAGE

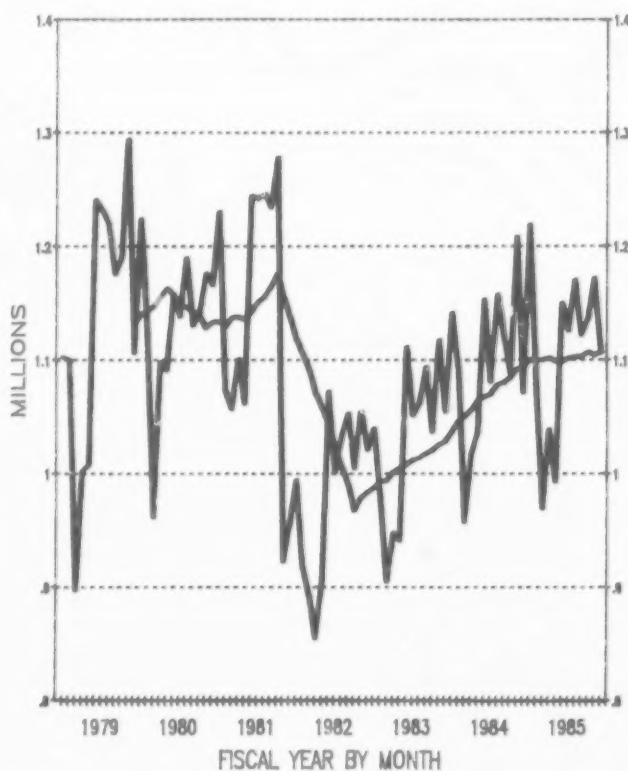
TOTAL



COMMERCIAL



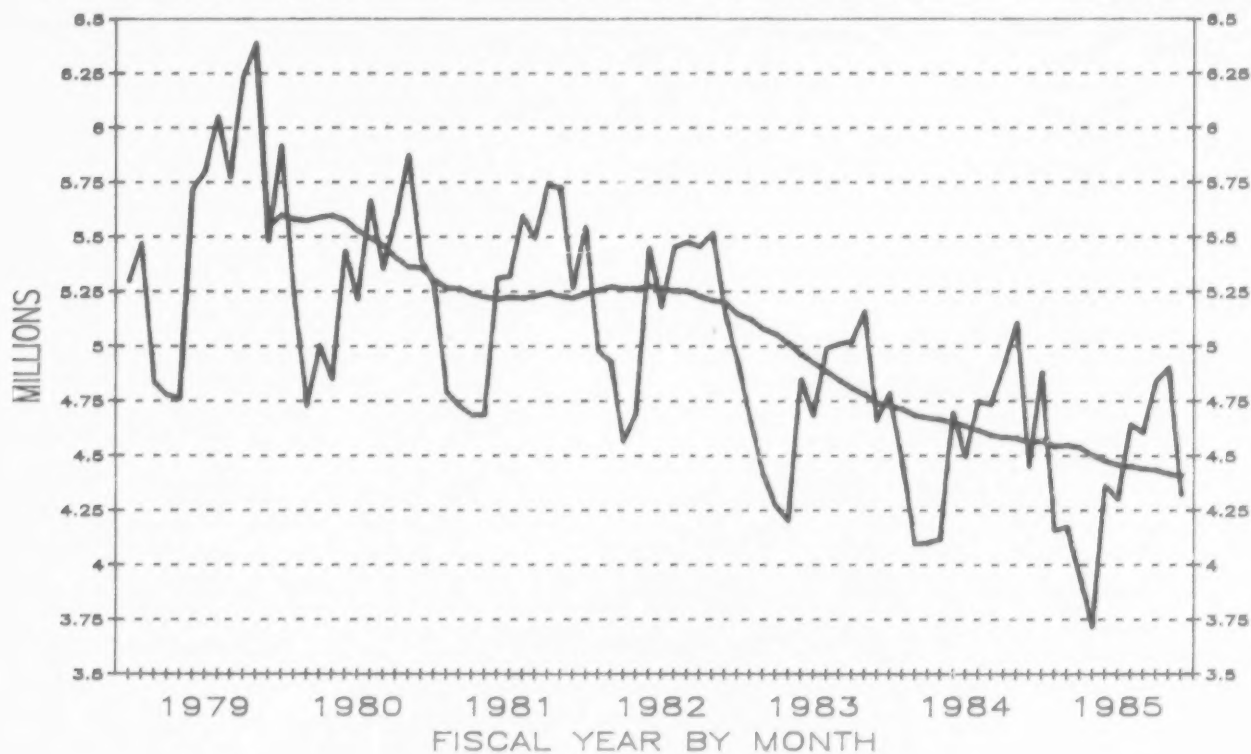
NONCOMMERCIAL



Flight Service Station Activity

User demand on Flight Service Stations--pilot briefings, flight plans, and aircraft contacted--totaled 52.9 million in fiscal 1985. This marked the sixth consecutive year of declining activity, down 3.4 percent from 1984 levels and 20.4 percent below the peak of 66.4 million services rendered in 1979. User demands for all flight service categories declined in 1985: the number of pilot briefings declined 3.6 percent; the number of aircraft contacted declined 4.8 percent; and the number of flight plans originated declined 2.3 percent.

TOTAL FLIGHT SERVICES ACTUAL AND 12-MONTH MOVING AVERAGE



FORECAST ASSUMPTIONS

Number of Towers

Growth in FAA workload measures is not only a function of the demand imposed on the National Airspace System, it also consists of aviation activity at those locations previously not provided FAA services. In addition, aviation activity at contract towers has to be excluded from the workload measures.

The FAA is currently contracting out "Low Activity Towers," and the operation counts at these locations will no longer be included in the FAA tower workload measures. Deletion of counts at six such towers in the 1985 data resulted in a reduction of 331,000 operations from the reported activity in fiscal 1985. General aviation accounted for the vast majority of these operations, totaling 309,000 compared to only 19,000 for commuters/air taxis and 3,000 for military. In total, there were 13 contracted towers in fiscal 1985 which totaled 562,000 operations. It is estimated that there will be a total of 57 contract towers open in 1986.

The current forecast assume that the number of towered airports will decline from 398 in 1985 to 385 in 1988 and remain at this level throughout the remainder of the forecast period.

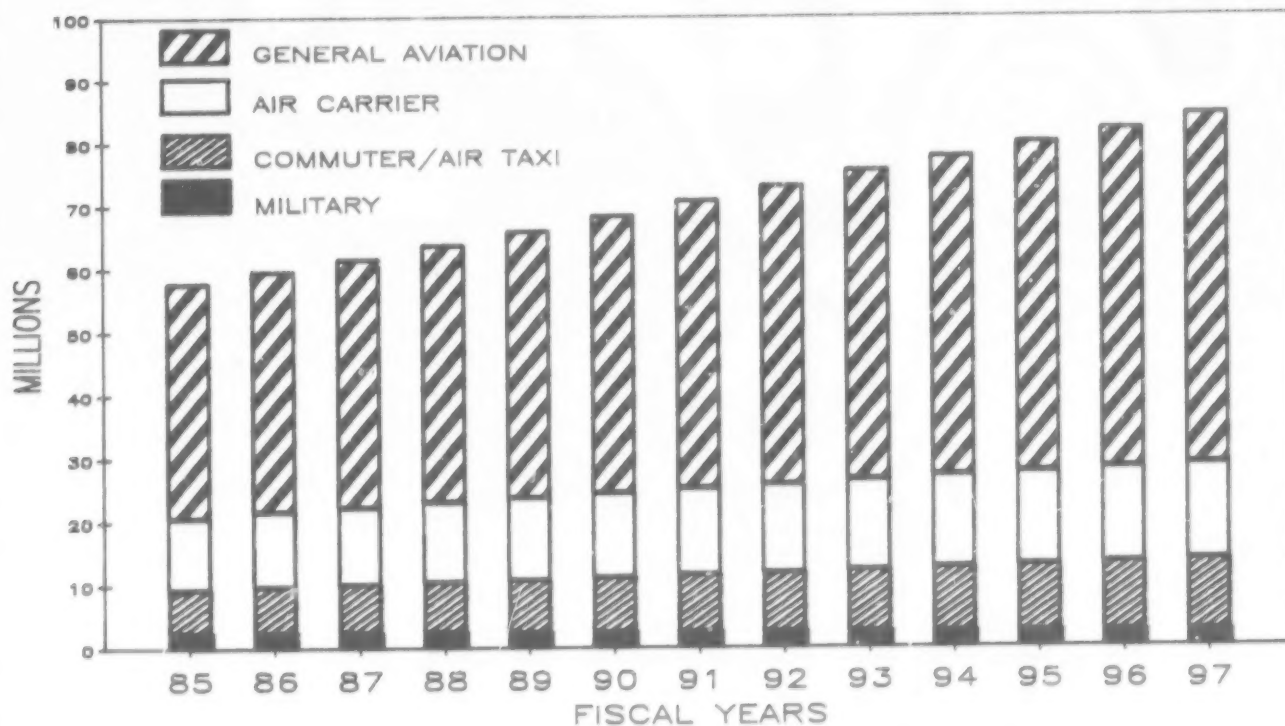
WORKLOAD FORECASTS

FAA Tower Activity

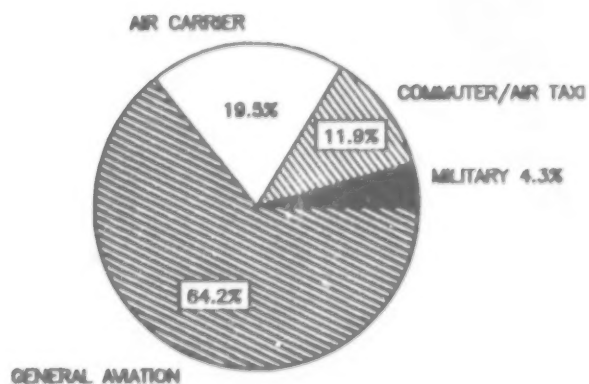
Despite three years of strong growth, aircraft activity at FAA towered airports totaled only 90.5 percent of the pre-strike level of activity in fiscal 1985. In addition, the recorded 1985 operations were 16.1 percent below the all-time high activity level recorded in 1979. Activity at FAA towered airports is not expected to return to pre-strike levels until 1989 and will not exceed the 1979 peak until 1991. The current forecasts call for towered operations to increase by 3.3 percent in both 1986 and 1987 and to average 3.2 percent over the 12-year forecast period. In absolute numbers, towered operations are forecast to increase from 57.9 million in 1985 to 84.5 million in 1997.

The mix of traffic at FAA towered airports is expected to become more heterogeneous over the forecast period. This results from the fact that general aviation and commuter/air taxi operations are expected to grow at a much more rapid rate than are air carrier operations. The combined operations of general aviation and commuters/air taxis are expected to account for almost 79 percent of total tower operations in 1997, up from 76.1 percent in fiscal 1985.

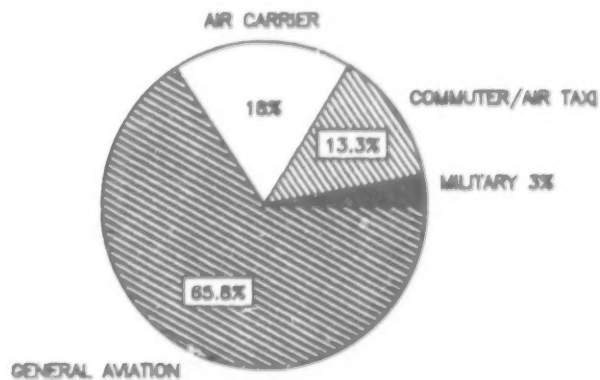
AIRCRAFT OPERATIONS AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP



1985



1997

The forecasted average annual growth rate for each aviation user group for the 1985 to 1997 period is: air carrier, 2.5 percent; general aviation, 3.4 percent (3.4 percent itinerant and 3.5 percent local); and commuter/air taxi, 4.1 percent. Military operations are expected to remain constant at the 1985 level of activity.

Instrument Operations

In fiscal 1985, instrument operations at FAA towered airports had, for all intensive purposes, returned to the pre-strike level of activity. The number of instrument operations are forecast to increase by 4.9 percent in 1986, 4.2 percent in 1987, and average 2.8 percent between 1985 and 1997. These growth rates translate into a total of 53.8 million operations in 1997, up from 38.7 million in 1985.

The mix of instrument operations is also expected to become more heterogeneous. The number of commuter/air taxi and general aviation operations performed by smaller aircraft is expected to increase somewhat faster than air carrier operations performed with the larger, more sophisticated aircraft. By 1997, 63.1 percent of all instrument operations are expected to be performed by commuter/air taxi and general aviation aircraft, up from 59.0 percent in 1985.

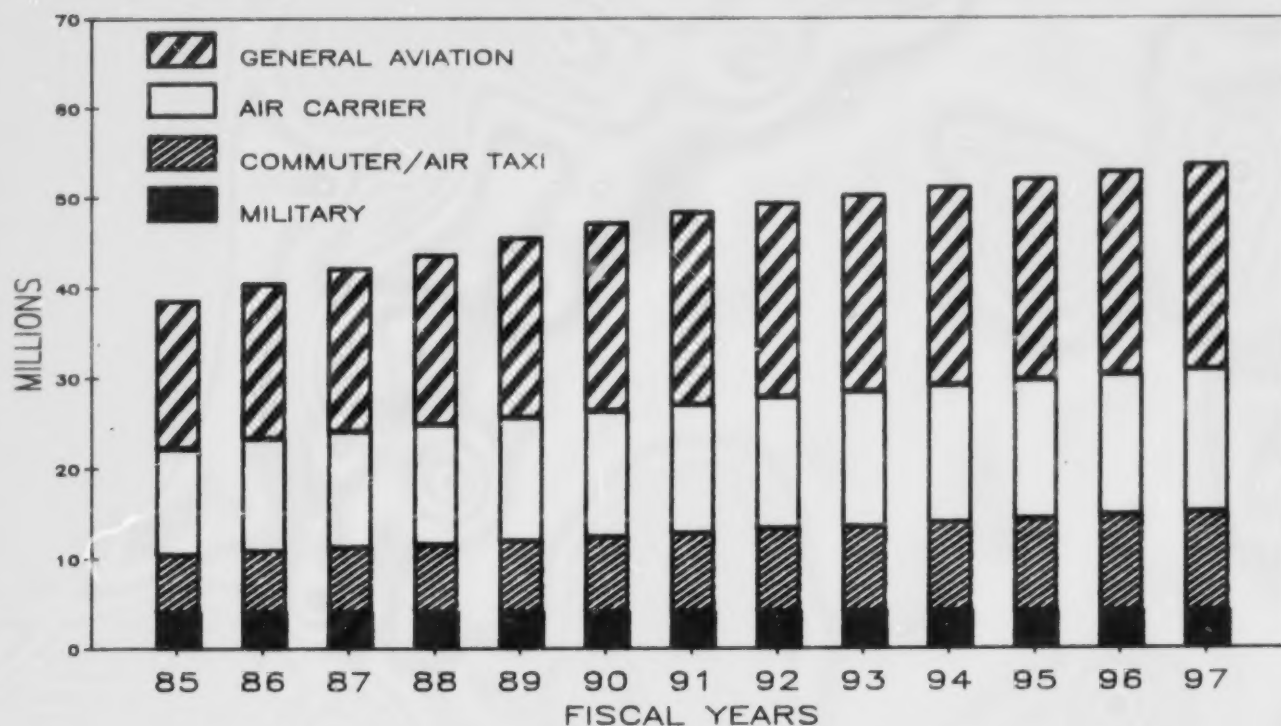
The forecasted average annual growth rate for each user group is: commuter/air taxi, 4.6 percent; general aviation, 2.8 percent; and air carrier, 2.5 percent. Military operations are expected to remain constant throughout the forecast period.

Center Activity

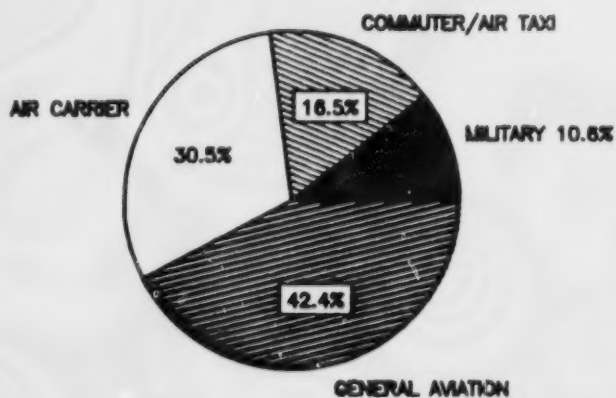
Following three consecutive years of strong growth, Center activity in fiscal 1985 exceeded pre-strike levels by 8.0 percent. The workload at FAA Air Route Traffic Control Centers is expected to continue to exhibit strong growth throughout the forecast period, increasing by 3.9 percent in 1986, 3.2 percent in 1987, and averaging 2.8 percent over the next 12 years. In absolute numbers, the Center workload is forecast to increase from 32.7 million aircraft handled in 1985 to 45.3 million in 1997.

Both air carrier and general aviation's share of Center workload is expected to decline over the forecast period; air carrier's share declining slightly from 44.6 percent in 1985 to 44.2 percent in 1997. General aviation's share is expected to decline from 25.4 percent to 24.1 percent over the same time period. Commuter/air taxi activity is expected to account for 20.8 percent of Center workload in 1997, up from 14.7 percent in 1985.

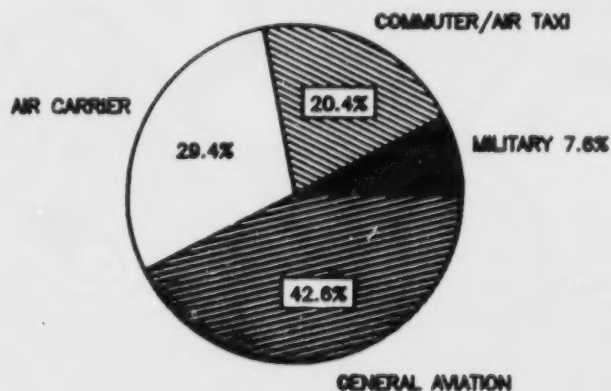
INSTRUMENT OPERATIONS AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP

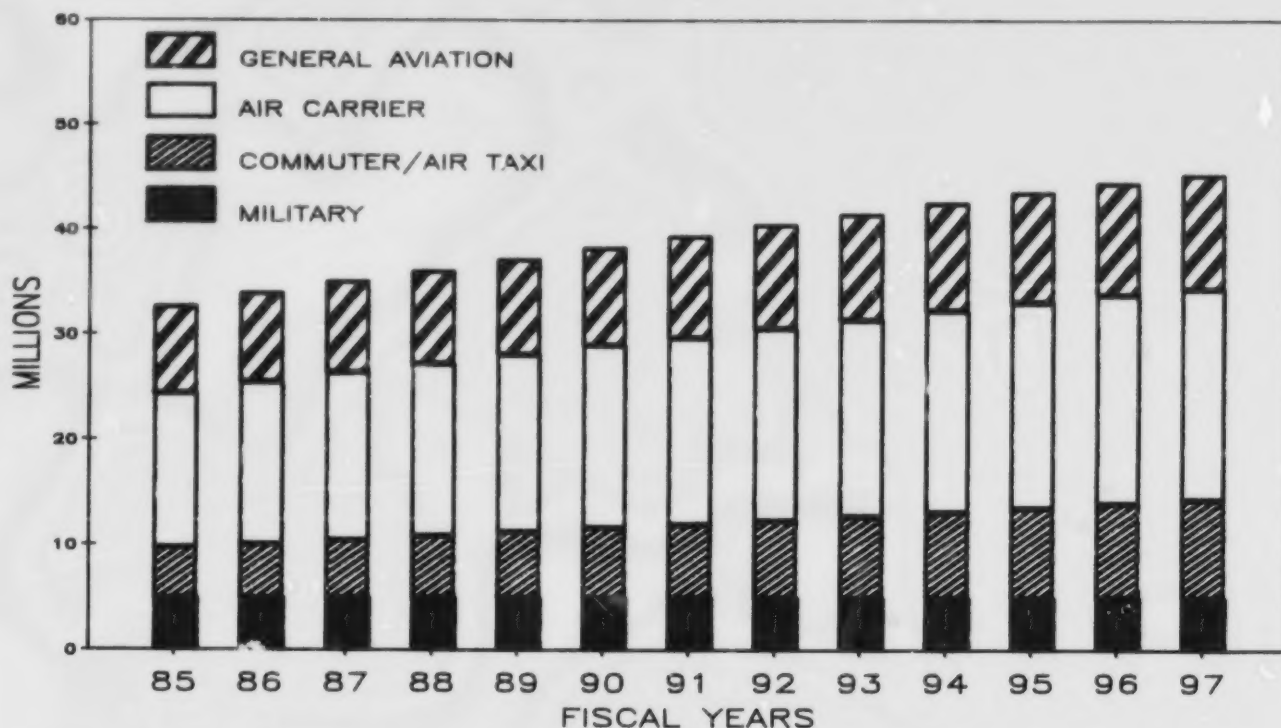


1985

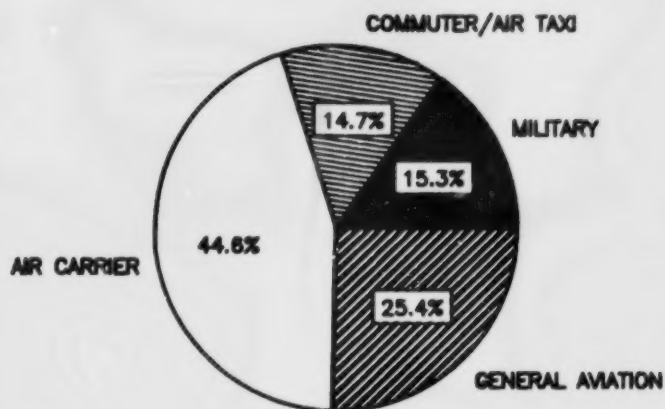


1997

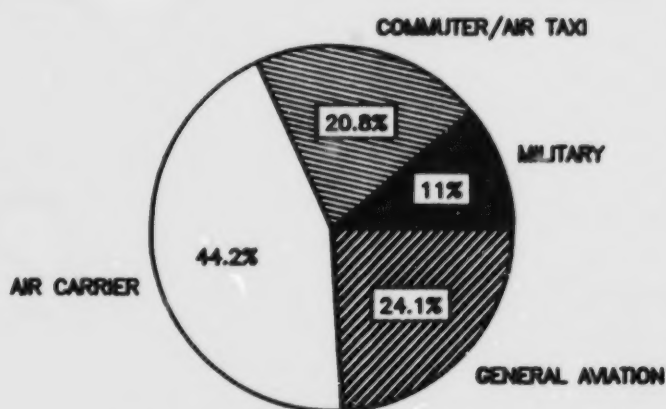
IFR AIRCRAFT HANDLED AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS



DISTRIBUTION OF WORKLOAD BY USER GROUP



1985



1997

The projected average annual growth rate by user groups is: commuter/air taxi, 5.8 percent; air carrier, 2.7 percent; and general aviation, 2.3 percent. The number of military operations is expected to remain constant at the 1985 level of activity.

Forecasts for individual Centers are available upon request from the Forecast Branch, Office of Aviation Policy and Plans.

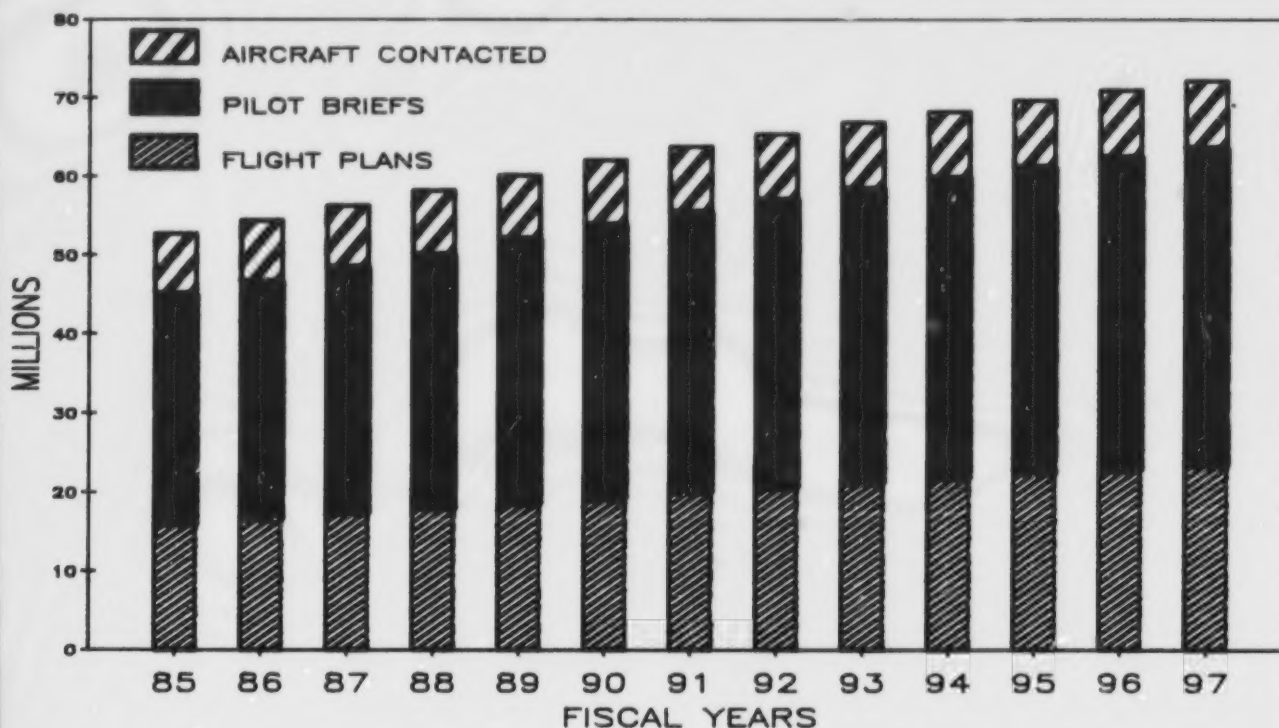
Flight Service Station Activity

In fiscal 1985, the number of services rendered at FAA Flight Service Stations equalled only 84 percent of the level of activity achieved in the pre-strike period and is not expected to return to pre-strike levels until 1991. Total flight services originating at Flight Service Stations are projected to increase by 3.3 percent in 1986, 3.5 percent in 1997, and average 2.7 percent over the entire forecast period. In actual numbers, flight services rendered are forecast to increase from 52.9 million in 1985 to 72.4 million in 1997.

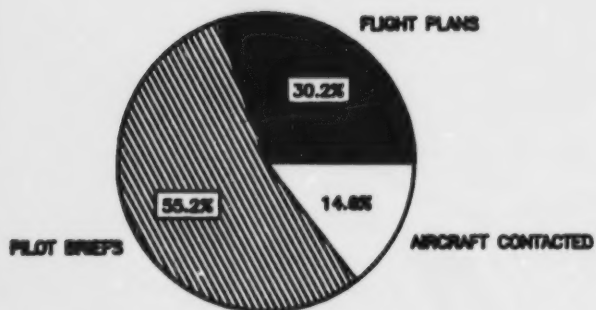
The number of pilot briefings are expected to increase from 14.6 million in 1985 to 20.2 million in 1997, an average annual growth rate of 2.8 percent. The number of flight plans originated are forecast to increase at an average annual rate of 3.2 percent between 1985 and 1997, from 8.0 million to 11.7 million. The number of aircraft contacted is projected to increase at an annual rate of only 0.9 percent over the forecast period, from 7.7 million in 1985 to 8.6 million in 1997.

Forecasts for individual Flight Service Stations are available upon request from the Forecast Branch, Office of Aviation and Policy and Plans.

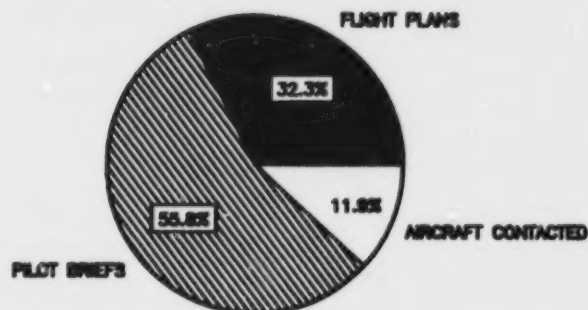
FLIGHT SERVICES ORIGINATED AT FAA FLIGHT SERVICE STATIONS



DISTRIBUTION BY TYPE OF SERVICE PROVIDED



1985



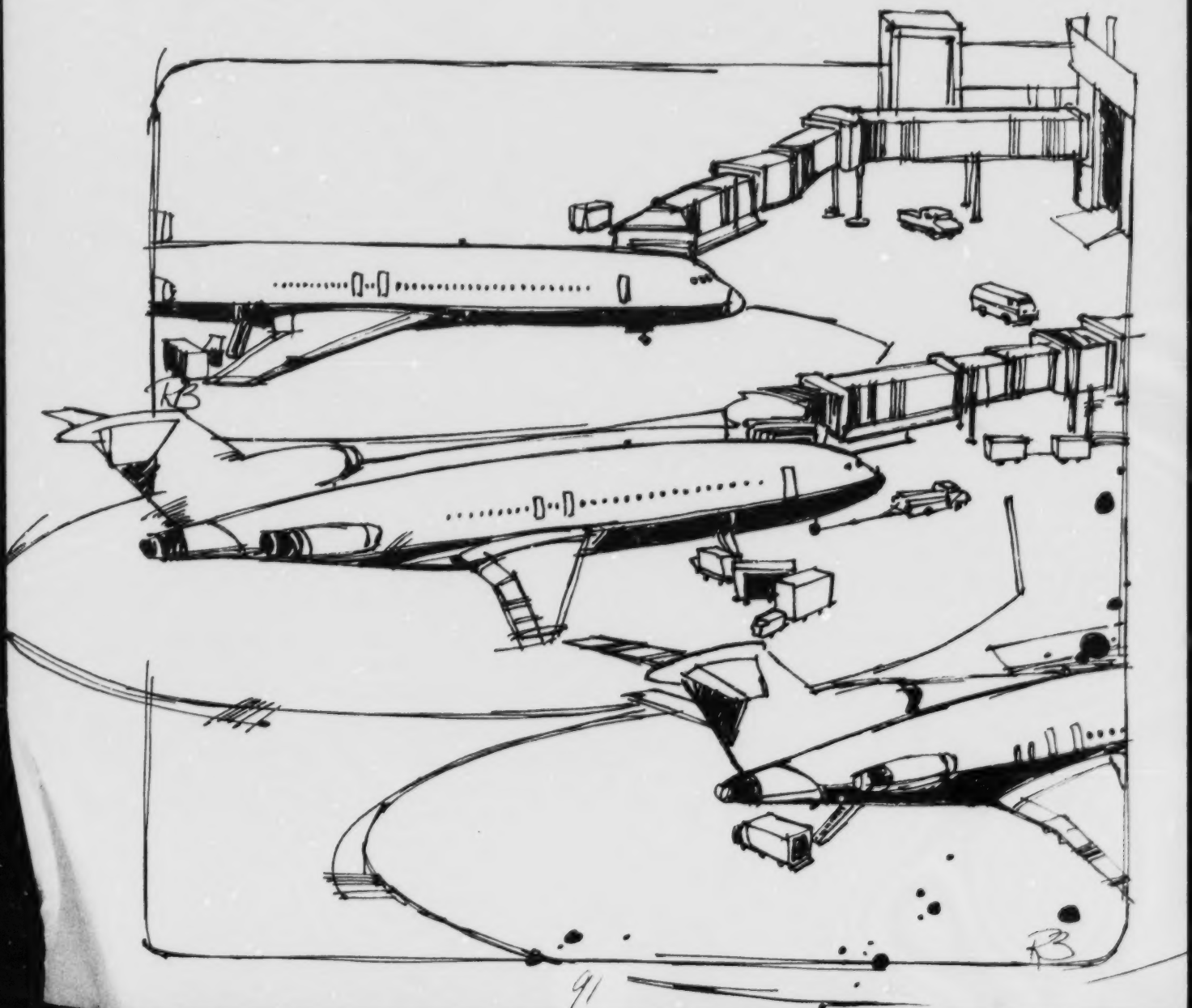
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CHAPTER VIII

TERMINAL AREA FORECASTS

LARGE HUBS



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Chapter VIII

Terminal Area Forecasts - Large Hubs

The Terminal Area Forecasts (TAF) is a set of forecasts of enplanements, aircraft operations, instrument operations and instrument approaches prepared for over 4,000 airports in the United States. The data base for the TAF includes airports with FAA towers, airports with commercial service, airports that are in the National Plan of Integrated Airport Systems and other nontowered public use airports. This chapter presents data from the TAF for: (1) the top 50 airports in the U.S. ranked by total enplanements in fiscal 1984; (2) the top 50 airports ranked by total operations in 1984; (3) forecasts of total enplanements and total operations at 28 large hub airports and (4) selected data by user category for 3 airports where "hub studies" were conducted for the metropolitan areas in 1984. Large hub airports are defined as those airports enplaning one percent or more of the total passenger enplanements in fiscal 1984.

REVIEW OF 1984

Top 50 Airports

In fiscal 1984, Chicago O'Hare was the busiest airport in the U.S. when ranked both by total enplanements (air carrier, commuter and air taxi) and total aircraft operations. Chicago had 20.1 million passenger enplanements and 713,400 aircraft operations. Atlanta was the second busiest airport with 19.4 million enplanements and 666,100 operations. These rankings were identical to those observed in 1983. In terms of total enplanements, Chicago and Atlanta reversed ranks in 1983 and 1984 relative to 1981 and 1982.

Other airports in the top five ranked by total enplanements in 1984 were Los Angeles International, Dallas/Fort Worth International, and New York Kennedy. These were ranked third, fourth, and fifth in total enplanements and fourth, fifth, and nineteenth, respectively, in total operations. 1984 marks the first year that Dallas/Fort Worth enplaned more people than Kennedy. Van Nuys, California, was the busiest general aviation airport and the only general aviation airport that was ranked among the top five airports based on total operations. Van Nuys has held this distinction consistently for several years.

In FY 1984, the top 50 commercial airports accounted for 81.8 percent of the total number of enplanements (air carrier, commuter, and air taxi) which occurred at airports with 1,000 or more enplanements. In fact, the top five airports (Chicago, Atlanta, Los Angeles, Dallas/Fort Worth, and New York Kennedy) accounted for over 24 percent of total passenger enplanements. The top 20 airports had 59 percent of total enplanements, about the same as in 1983.

TOP 50 AIRPORTS RANKED BY 1984 TOTAL PASSENGER ENPLANEMENTS

AIRPORT	TOTAL ENPLANEMENTS* (000)	PERCENT**	CUMULATIVE PERCENT	FY83 RANK
1. Chicago O'Hare	20,101	5.7	5.7	1
2. Atlanta	19,379	5.5	11.2	2
3. Los Angeles International	16,356	4.6	15.8	3
4. Dallas/Ft. Worth	15,480	4.4	20.2	5
5. New York Kennedy	14,253	4.0	24.2	4
6. Denver Stapleton	12,965	3.7	27.9	6
7. San Francisco International	11,490	3.3	31.2	7
8. Newark	11,235	3.3	34.5	12
9. New York LaGuardia	9,653	2.7	37.2	9
10. Boston	9,305	2.6	39.8	10
11. Miami	9,037	2.6	42.4	8
12. St. Louis International	8,202	2.3	44.7	11
13. Honolulu	7,679	2.2	46.9	13
14. Washington National	6,921	2.0	48.9	14
15. Pittsburgh	6,563	1.9	50.8	17
16. Minneapolis/St. Paul	6,316	1.8	52.6	16
17. Houston Intercontinental	5,984	1.7	54.3	13
18. Phoenix	5,536	1.6	55.9	21
19. Detroit	5,531	1.6	57.5	19
20. Seattle-Tacoma	5,464	1.5	59.0	18
21. Philadelphia	4,897	1.4	60.4	22
22. Las Vegas	4,712	1.3	61.7	20
23. Charlotte	4,262	1.2	62.9	25
24. Orlando	4,141	1.2	64.1	24
25. Tampa	3,856	1.1	65.2	23
26. San Diego	3,573	1.0	66.2	27
27. Houston Hobby	3,513	1.0	67.2	29
28. Salt Lake City	3,373	1.0	68.2	26
29. New Orleans	3,306	0.9	69.1	28
30. Baltimore	3,163	0.9	70.0	33
31. Dallas Love Field	3,157	0.9	70.9	29
32. Kansas City	3,027	0.9	71.8	34
33. Ft. Lauderdale	2,879	0.8	72.6	32
34. Cleveland	2,876	0.8	73.4	30
35. San Juan	2,449	0.7	74.1	36
36. Memphis	2,380	0.7	74.8	35
37. Portland	2,299	0.7	75.5	37
38. San Antonio	2,097	0.6	76.1	38
39. West Palm Beach	1,899	0.5	76.6	40
40. Kahului	1,891	0.5	77.1	43
41. San Jose	1,880	0.5	77.6	41
42. Buffalo	1,820	0.5	78.1	42
43. Cincinnati	1,804	0.5	78.6	38
44. Albuquerque	1,732	0.5	79.1	47
45. Oakland	1,636	0.5	79.6	45
46. Washington Dulles	1,634	0.5	80.1	52
47. Columbus, Ohio	1,590	0.5	80.6	46
48. Hartford	1,583	0.4	81.0	50
49. Austin	1,552	0.4	81.4	59
50. Norfolk	1,347	0.4	81.8	51

Source: FAA Terminal Area Forecasts FY 85-97

* Includes U.S. certificated route air carriers, foreign flag carriers, supplementals, air commuters, and air taxis.

** Based on 353.098 million passenger enplanements.

TOP 50 TOWERED AIRPORTS RANKED BY 1984 TOTAL AIRCRAFT OPERATIONS

<u>AIRPORT</u>	<u>TOTAL OPERATIONS (000)</u>	<u>PERCENT*</u>	<u>CUMULATIVE PERCENT</u>	<u>FY83 RANK</u>
1. Chicago O'Hare	713.4	1.25	1.25	1
2. Atlanta	666.1	1.17	2.42	2
3. Van Nuys	582.9	1.02	3.44	4
4. Los Angeles International	543.3	0.95	4.39	3
5. Dallas/Ft. Worth	503.7	0.88	5.27	7
6. Denver Stapleton	488.3	0.86	6.13	5
7. Santa Ana	483.9	0.85	6.98	6
8. Long Beach	450.9	0.79	7.77	8
9. San Francisco	401.3	0.70	8.47	12
10. St. Louis Lambert	392.6	0.69	9.16	13
11. Phoenix Sky Harbor	391.1	0.69	9.85	15
12. Boston	380.5	0.67	10.52	18
13. Seattle Boeing Field	378.6	0.67	11.19	9
14. Oakland	374.5	0.66	11.79	10
15. Anchorage Merrill Field	374.1	0.66	12.45	19
16. Denver Arapahoe	366.2	0.64	13.09	11
17. New York LaGuardia	362.1	0.64	13.73	17
18. San Jose	360.8	0.63	14.36	24
19. New York Kennedy	360.6	0.63	14.99	14
20. Newark	355.5	0.62	15.61	40
21. Miami International	354.9	0.62	16.23	16
22. Pittsburgh	349.5	0.61	16.84	25
23. Honolulu	343.4	0.60	17.44	22
24. Washington National	342.8	0.60	18.04	21
25. Philadelphia	339.4	0.60	18.64	23
26. Minneapolis/St. Paul	330.8	0.58	19.22	30
27. Houston Hobby	328.4	0.58	19.80	27
28. Houston Intercontinental	321.0	0.56	20.36	20
29. Dallas Love Field	319.7	0.56	20.92	29
30. Detroit Metro	315.8	0.55	21.47	38
31. Miami Tamiami	312.4	0.55	22.02	28
32. Charlotte	308.4	0.54	22.56	35
33. Pontiac	298.3	0.52	23.08	34
34. Memphis	297.3	0.52	23.60	32
35. Las Vegas	296.6	0.52	24.12	31
36. Tampa	294.7	0.52	24.64	37
37. Baltimore	278.1	0.49	25.13	44
38. Teterboro	276.0	0.49	25.62	33
39. Torrance	262.6	0.46	26.08	39
40. Ft. Worth Meacham	257.7	0.45	26.53	26
41. Hayward	253.3	0.44	26.97	42
42. San Diego Montgomery	251.5	0.44	27.41	56
43. Salt Lake City	251.1	0.44	27.85	36
44. Caldwell	248.2	0.44	28.29	41
45. Tucson	243.5	0.43	28.72	47
46. West Palm Beach	242.4	0.43	29.15	50
47. Anchorage International	242.2	0.43	29.58	52
48. Santa Barbara	241.0	0.42	30.00	58
49. Burbank	240.9	0.42	30.42	79
50. Cleveland	240.7	0.42	30.84	62

Source: FAA Terminal Area Forecasts FY 85-97

* Based on 56.959 million aircraft operations at 403 FAA-operated airport traffic control towers in FY 1984.

LARGE HUB FORECASTS

Using 1984 as the base year, forecasts for airports in the TAF were generated for each year to 2000. The total enplanements and related operations forecasts for the 28 large hub airports for fiscal years 1990 and 2000 are presented on pages 97 and 98. By 2000, Chicago O'Hare is expected to reach nearly 40.7 million enplanements and Atlanta is expected to reach 34.1 million. Surprisingly, Denver will have surpassed Atlanta in terms of total enplaned passengers, and Dallas/Fort Worth will have virtually the same number of enplanements as Atlanta.

Total aircraft operations will reach 934,000 at Chicago O'Hare and 800,000 at Atlanta. These increases will come from growth in the U.S. economy, as a whole, and local airport and airline developments. These developments may include the addition of new gates and the restructuring of airline fleets. Chicago and Atlanta are expected to remain the two busiest airports in the country in terms of the total number of aircraft operations.

Some airports (such as Charlotte and Newark) will have reasonably high enplanement growth resulting from general economic conditions and managerial decisions by air carriers to use these airports as hubs. Other airports (Los Angeles, New York LaGuardia, and Washington National, for example) are expected to experience relatively slow growth because of capacity, environmental or policy constraints.

The average annual growth rates expected for the large hub airports for operations and enplanements for the 1984 to 2000 period are indicated in graphic form on page 99. Because of differences in the growth rates among airports, the relative rankings of these 28 hub airports in 2000 will differ from the rankings observed in 1984. For example, Denver will rank second in enplanements in 2000, compared with sixth in 1984. The most significant change will take place in Pittsburgh's rank. This airport is expected to change from fifteenth in 1984 to eighth in 2000. At the other extreme, Washington National Airport is expected to fall from fourteenth place in 1984 to twenty-seventh in 2000 when ranked by total enplanements. Large shifts could occur also at other airports if a major airline decides to use a small or medium hub airport as a primary hub. Nashville and Raleigh-Durham, for example, may experience such shifts following American Airline's decisions to use these airports as hubs.

TOTAL PASSENGER ENPLANEMENTS
AT LARGE HUB AIRPORTS*
(In Thousands)

<u>Airport</u>	<u>FY 1984</u>	<u>FY 1990</u>	<u>FY 2000</u>
Chicago O'Hare **	20,101	30,458	40,655
Atlanta	19,379	27,316	34,114
Los Angeles	16,356	19,281	22,143
Dallas/Ft. Worth	15,480	21,904	33,675
New York Kennedy	14,253	18,500	22,500
Denver	12,965	21,673	36,297
San Francisco	11,490	12,508	14,124
Newark	11,235	18,745	27,465
New York LaGuardia	9,653	12,527	14,950
Boston	9,305	12,603	18,760
Miami	9,037	12,050	19,119
St. Louis	8,208	11,010	15,731
Honolulu	7,679	9,877	11,317
Washington National	6,921	7,510	7,924
Pittsburgh	6,563	10,780	19,272
Minneapolis/St. Paul	6,316	8,906	14,476
Houston Intercontinental	5,984	8,415	13,549
Phoenix	5,536	8,760	14,379
Detroit	5,531	7,605	11,974
Seattle-Tacoma	5,464	6,868	11,428
Philadelphia	4,897	6,601	10,019
Las Vegas	4,712	5,820	8,567
Charlotte **	4,262	7,209	11,081
Orlando **	4,141	6,195	9,932
Tampa	3,856	5,311	8,985
San Diego	3,573	5,278	8,187
Houston Hobby	3,513	5,767	9,248
Salt Lake City	3,373	4,314	6,403

* Includes U.S. certificated route air carriers, foreign flag carriers, supplementals, air commuters and air taxis.

** Forecasts as shown in individual hub forecast reports.

Source: FAA Terminal Area Forecasts FY 1985-2000

TOTAL AIRCRAFT OPERATIONS AT LARGE HUB AIRPORTS*

(In Thousands)

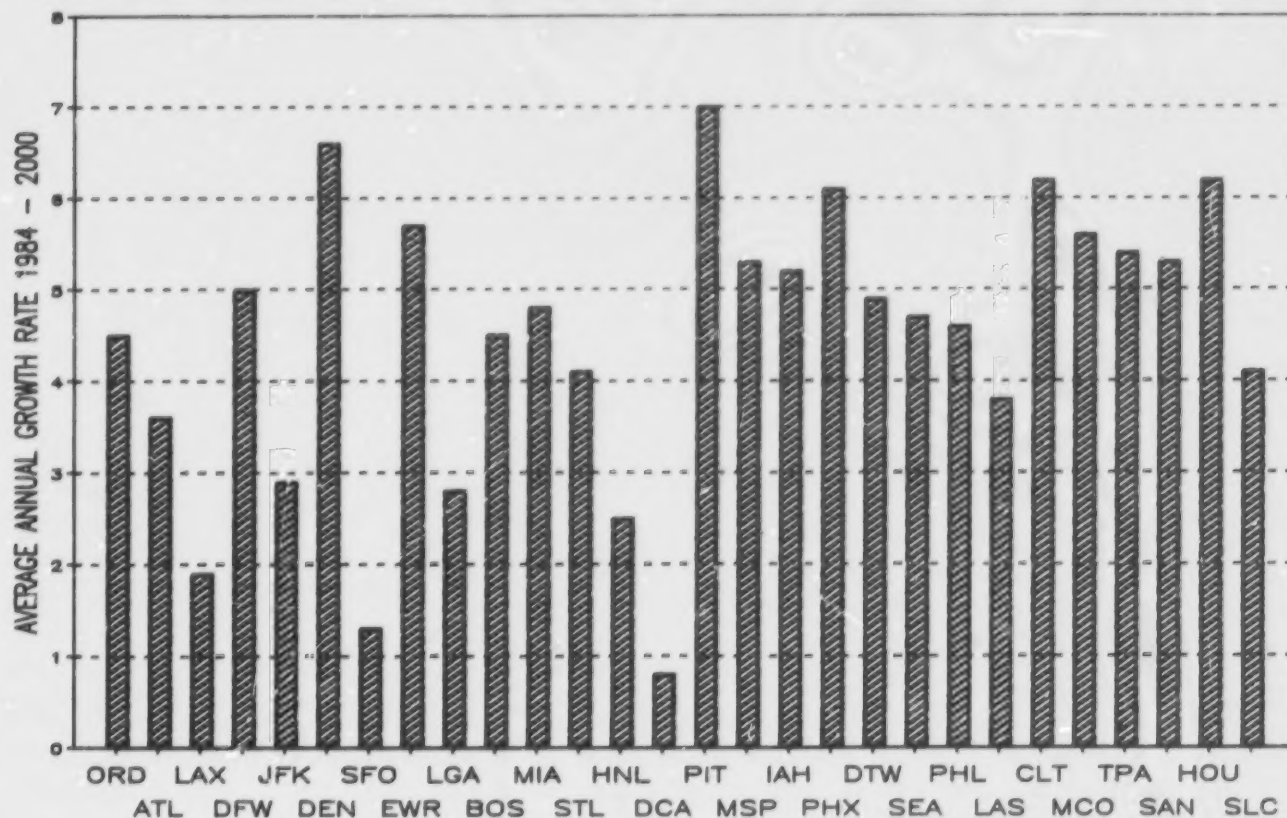
<u>Airport</u>	<u>FY 1984</u>	<u>FY 1990</u>	<u>FY 2000</u>
Chicago O'Hare **	713	833	934
Atlanta	666	770	800
Los Angeles	543	618	632
Dallas/Ft. Worth	504	569	626
New York Kennedy	361	361	378
Denver	488	522	684
San Francisco	401	396	399
Newark	356	404	430
New York LaGuardia	362	370	370
Boston	381	438	534
Miami	355	369	459
St. Louis	393	433	519
Honolulu	343	397	508
Washington National	343	366	412
Pittsburgh	350	397	475
Minneapolis/St. Paul	331	404	539
Houston Intercontinental	321	376	552
Phoenix	391	447	579
Detroit	316	435	581
Seattle-Tacoma	220	248	314
Philadelphia	339	399	525
Las Vegas	297	351	496
Charlotte **	308	392	485
Orlando **	180	258	362
Tampa	295	295	354
San Diego	150	186	247
Houston Hobby	328	350	430
Salt Lake City	251	318	530

* Includes total itinerant and local operations performed by commercial air carriers, air taxis, military and general aviation.

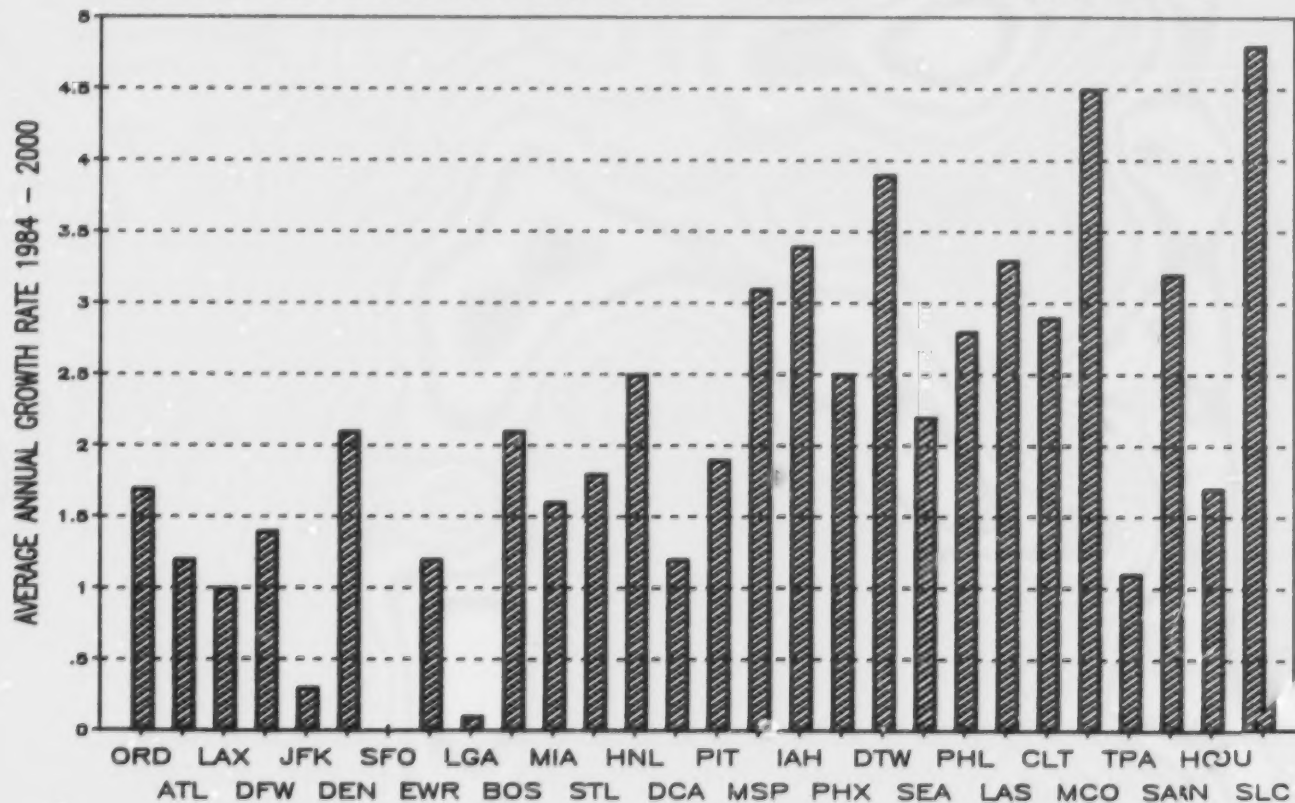
** Forecasts as shown in individual hub forecast reports.

Source: FAA Terminal Area Forecasts FY 1985-2000

PASSENGER ENPLANEMENTS AT LARGE HUB AIRPORTS



AIRCRAFT OPERATIONS AT LARGE HUB AIRPORTS



SPECIAL HUB FORECASTS

Continuing the individual hub forecasting efforts begun in 1978, FAA sponsored three studies in 1984--Chicago, Orlando, and Charlotte. These studies were conducted in conjunction with FAA regional, state and local planners, chambers of commerce, universities, and other interested parties. These groups often provide local aviation data, discuss general economic conditions (current, historical and future outlook), sponsor and attend local seminars, and review preliminary reports. This procedure keeps the public informed of aviation activity in the local community, encourages local input and public participation in the planning process, and, consequently, it enhances the acceptability of the final product.

The hub forecast studies examine the metropolitan statistical area or standard consolidated statistical area, as a whole. The area usually contains a major air carrier airport and several general aviation airports. Major objectives of these studies include: (1) examination of the interplay between the growth of aviation activity at the major airport and other airports in the area; (2) assessment of possible impacts of the growth of aviation activity in the area; and (3) examination of possible plans to accommodate the growth in aviation. Such plans may include reviews of possible distribution or redistribution of commercial and general aviation traffic and the development of reliever or satellite airports.

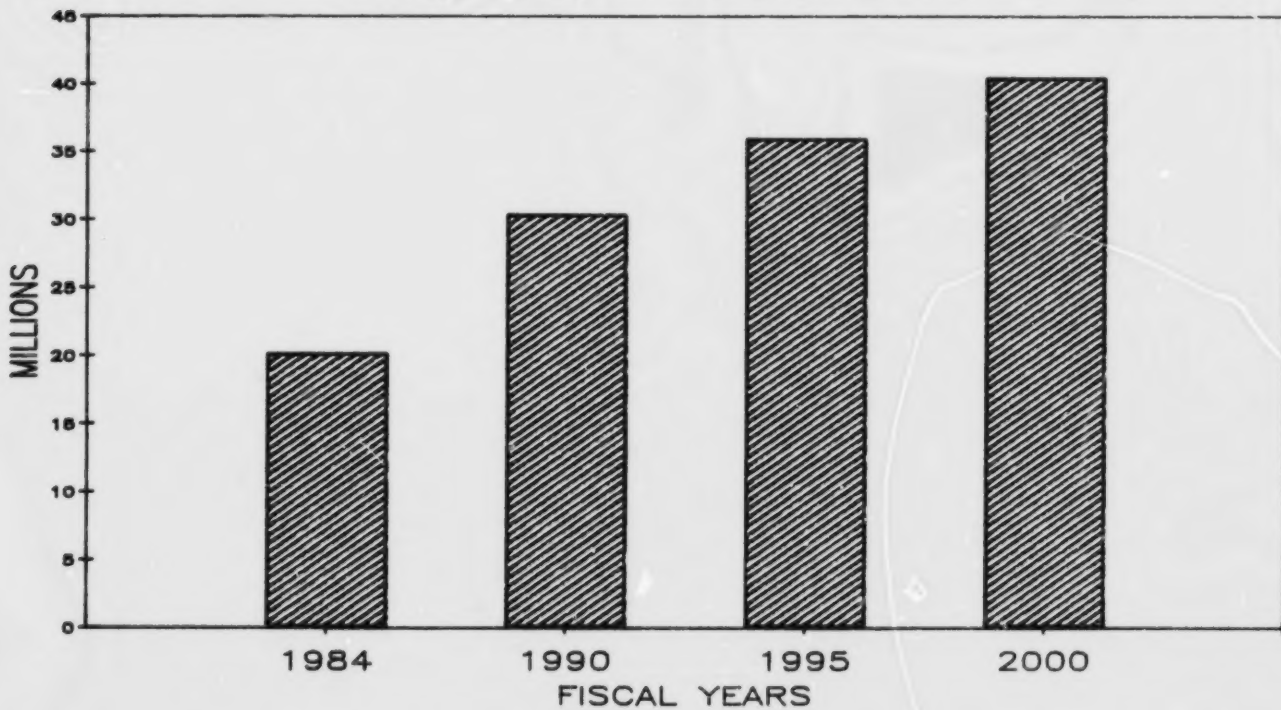
The graphics shown on the following pages depict the relative size and growth of enplanements and operations, by user category, at the three major airports with commercial service in the three large hubs discussed. Copies of the detailed studies are available from the Forecast Branch, Office of Aviation Policy and Plans.

Chicago Hub

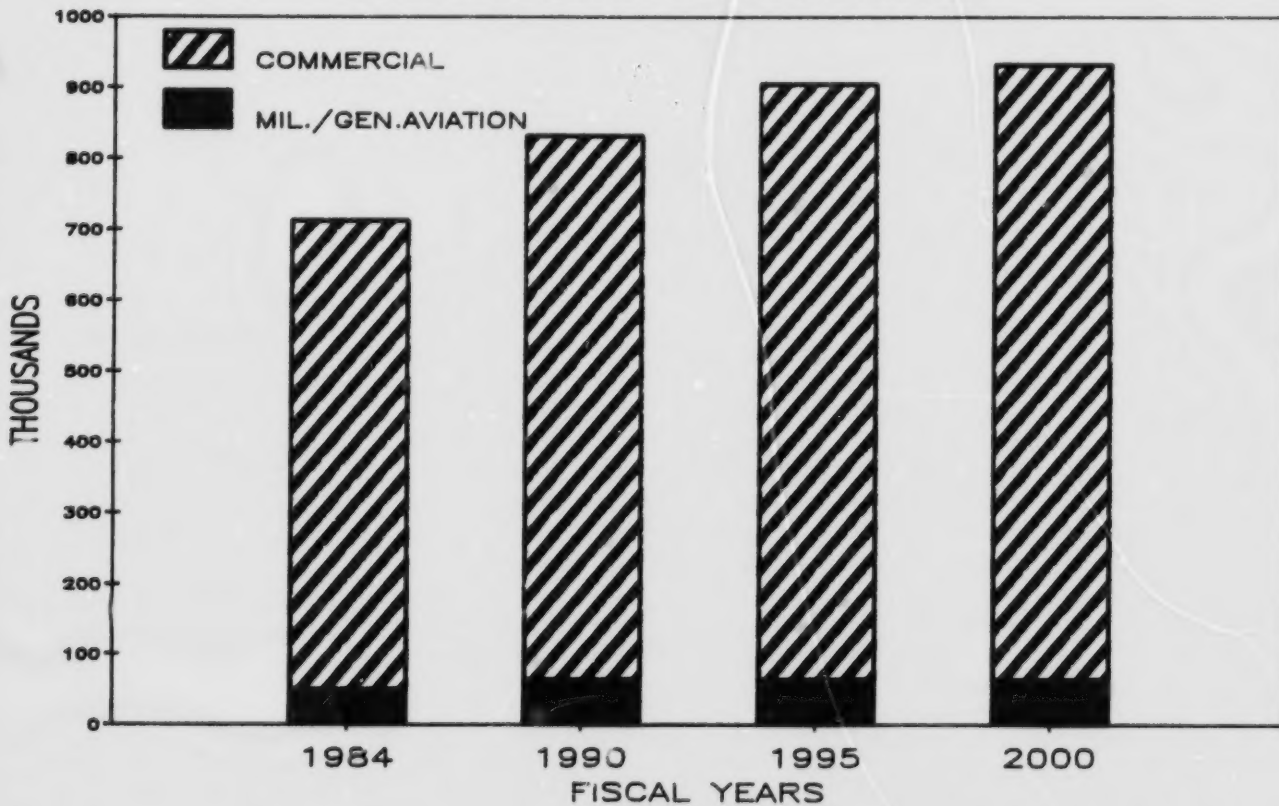
The Chicago Hub forecasts updated the previous report completed in March 1978, prior to the Airline Deregulation Act. The recent study examined aviation activity in light of the impact of deregulation, changes in the national and local economies, aviation policy decisions such as changes in the high density rule for Chicago O'Hare, and the possible impact of the 1992 World's Fair and the closing of Meigs Field. The resulting forecasts showed that by the year 2000 commercial enplanements at O'Hare will reach 40.7 million, an annual average growth of 4.5 percent. Enplanements at commercial airports in the area as a whole (O'Hare, Midway, Meigs, and Gary, Indiana) would reach 44.6 million by 2000, representing an annual average growth of about 3.2 percent.

CHICAGO O'HARE INTERNATIONAL AIRPORT

PASSENGER ENPLANEMENTS



TOTAL AIRCRAFT OPERATIONS



Total aircraft operations at Chicago O'Hare will reach 934,000 by the year 2000, an annual average growth of 1.7 percent. At the four airports with commercial service, total operations is expected to reach nearly 1.8 million, an increase of 2.2 percent annually. For the hub area as a whole (33 airports and 64 helipads), total operations is expected to climb to 4.9 million in 2000. Commercial aircraft operations will grow by an annual average of 2.0 percent. General aviation and military itinerant operations will grow by 3.6 percent and general aviation and military local operations will grow about 1.8 percent a year. All airports with commercial service, except Chicago O'Hare, are expected to share in the growth of general aviation activity.

Orlando Hub

The Orlando Hub forecasts were undertaken to consolidate all the relevant aviation data which pertain to the metropolitan statistical area (MSA). By definition, Orlando is a large hub since the Orlando International Airport had over one percent of total enplanements in 1984. The Orlando Hub area is defined as the Orlando MSA which consists of Orange, Osceola, and Seminole counties in central Florida. The forecasts provided in the report cover 27 airports including two FAA towered airports--Orlando International and Orlando Executive. Commercial passenger service is provided at Orlando International.

The forecasts show that by the year 2000, commercial enplanements at Orlando International will total 9.9 million, an annual average increase of 5.6 percent over the 1984 level. Total aircraft operations will reach 362,000, an annual average gain of 4.5 percent. For the Hub area as a whole (28 airports), total aircraft operations will reach 1.1 million, representing an increase of 3.5 percent annually. Commercial aircraft operations in the area, as a whole, is expected to grow by 4.2 percent. General aviation itinerant operations will grow by 3.3 percent annually and general aviation local operations will grow by 3.0 percent. Thirteen percent of the growth in general aviation activity will occur at Orlando International and 29 percent will occur at Orlando Executive.

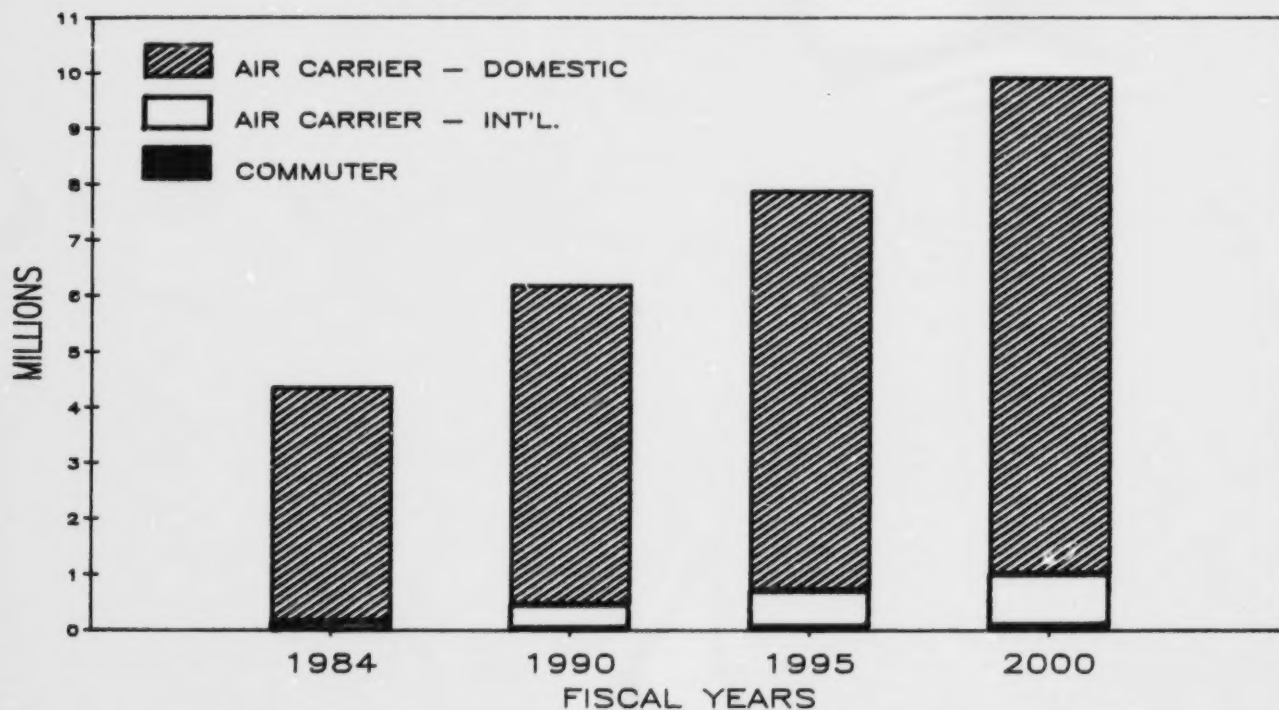
Charlotte Hub

The Charlotte Hub is located in the Piedmont Plateau about 180 miles from the Atlantic coast. The metropolitan statistical area is comprised of Cabarrus, Gaston, Lincoln, Mecklenburg, Rowan, and Union counties, North Carolina; and York County, South Carolina. Charlotte-Douglas Airport is the major air carrier airport serving the area. By the year 2000, total enplanements at the Charlotte-Douglas airport is expected to reach 11.1 million, representing an average annual increase of 6.1 percent above the 1984 level. Total aircraft operations at the airport will be approximately 485,000, an increase of 5.8 percent annually.

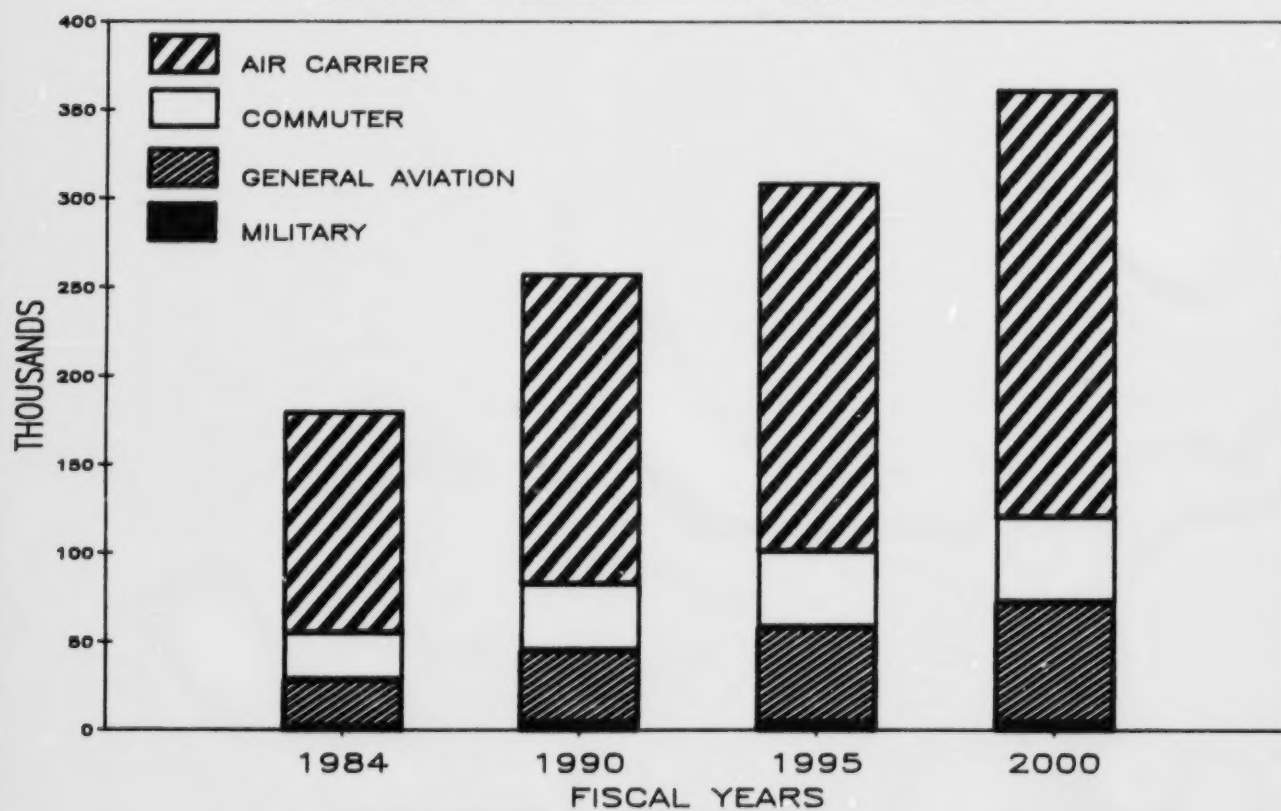
For the Hub area as a whole (23 airports), total operations is expected to reach approximately 979,200 operations by the year 2000, an annual average increase of 3.0 percent. General aviation itinerant operations will grow by 3.2 percent and general aviation local operations will grow by 2.8 percent annually. About 19 percent of the growth in general aviation activity will take place at the Charlotte-Douglas airport.

ORLANDO INTERNATIONAL AIRPORT

PASSENGER ENPLANEMENTS

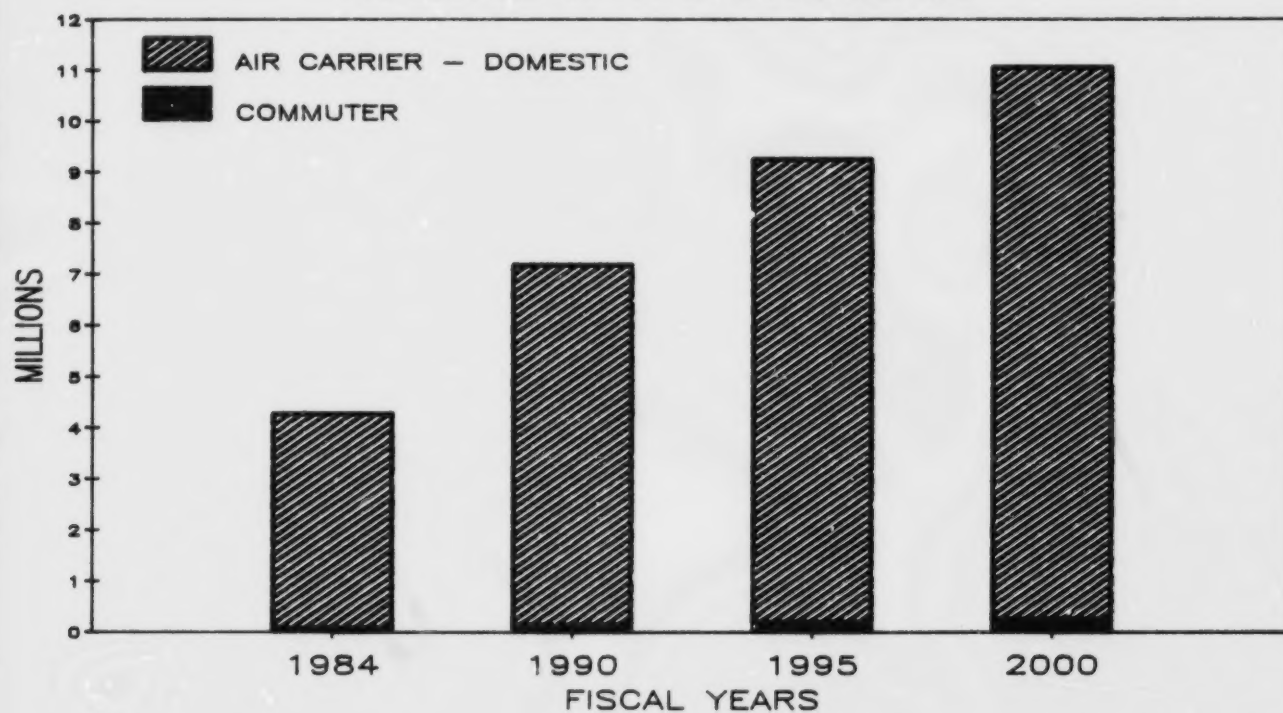


TOTAL AIRCRAFT OPERATIONS

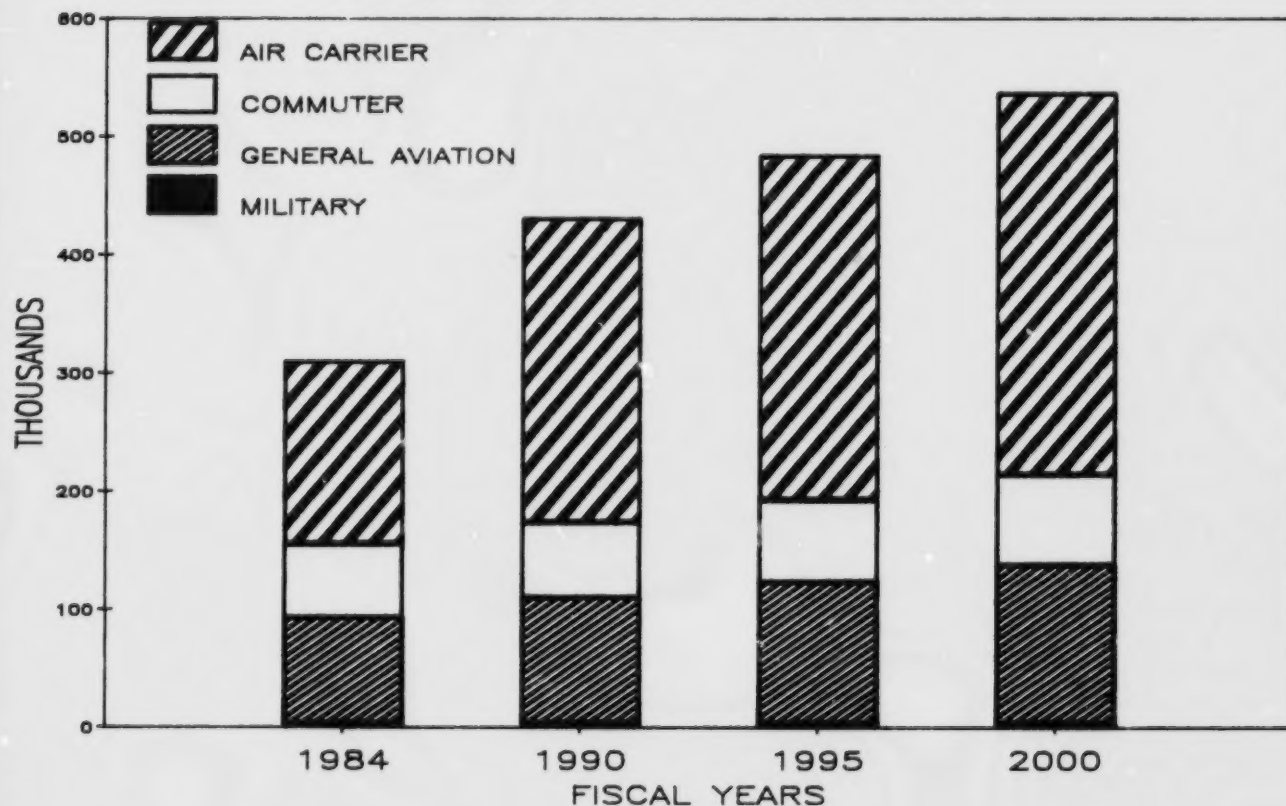


CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT

PASSENGER ENPLANEMENTS

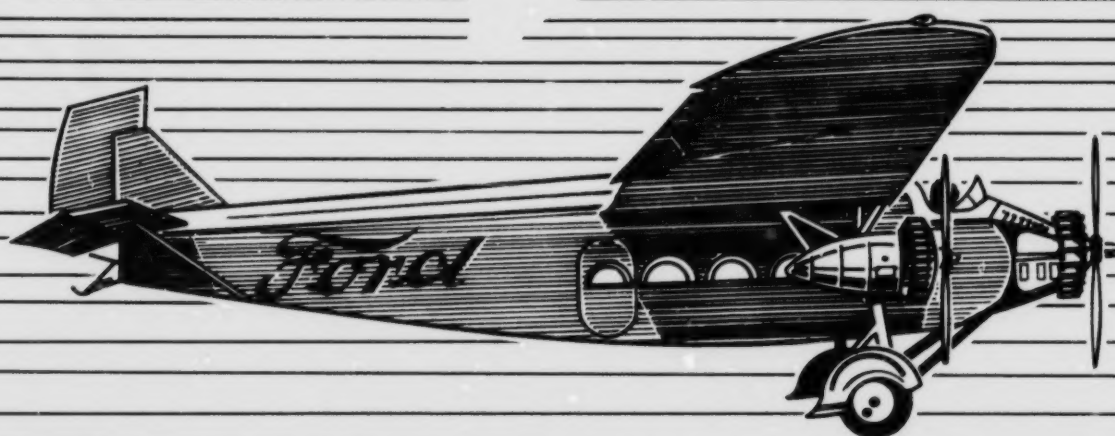


TOTAL AIRCRAFT OPERATIONS



CHAPTER IX

YEAR-BY-YEAR DATA FOR FAA AVIATION FORECASTS: FISCAL YEARS 1986 - 1997



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Chapter IX

Year-by-Year Data for FAA Aviation Forecasts

Fiscal Years 1986 - 1997

Chapter IX provides the detailed data for the National Aviation and FAA workload series forecasted by the FAA Office of Aviation Policy and Plans. The following should be noted with regard to the data contained in the Tables listed below:

- o Table 1 - Contains the unduplicated passenger traffic reported by U.S. scheduled air carriers reporting on RSPA Form 41 and commuter carriers reporting on RSPA Form 298-C.
- o Table 2 - San Juan and Virgin Island traffic is reported as domestic, beginning January 1, 1981.
 - Those carriers contained in the Air Carrier forecast data base can be found in Appendices A and B.
 - Includes the following traffic which is also reported as commuter/regional traffic in Table 6.

	<u>Enplanements</u> (Millions)	<u>RPM'S</u> (Millions)		<u>ENPLANEMENTS</u> (Millions)	<u>RPM'S</u> (Millions)
1980	4.199	627.4	1983	2.410	455.4
1981	5.642	906.2	1984	3.153	615.6
1982	4.478	732.1	1985E	3.949	790.5

- o Table 6 - Includes the duplicated traffic listed above for those regional/commuter carriers who report on both RSPA Forms 41 and 298-C.
 - Forecasts and historical data exclude Alaska and foreign territory traffic.
 - The forecasts exclude the following carriers because of the predominance of jet aircraft in their fleets: Altair (beginning in 1982) and Empire (beginning in 1985).
- o Table 7 - Includes only passenger aircraft with 60 seats or less. Aircraft also included with general aviation fleet shown in Table's 8 and 9.
- o Table 11 - Includes the rotorcraft fleet and hours flown included with general aviation in Table's 8, 9, and 10.

TABLE 1

UNITED STATES COMMERCIAL AIR CARRIERS & REGIONALS/COMMUTERS
SCHEDULED PASSENGER TRAFFIC

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS (Millions)			REVENUE PASSENGER MILES (Billions)		
	DOMESTIC	INTERNATIONAL	TOTAL	DOMESTIC	INTERNATIONAL	TOTAL
<u>Historical*</u>						
1980	287.8	24.2	312.0	204.4	54.2	258.6
1981	274.7	21.2	295.9	199.1	50.3	249.4
1982	286.0	19.8	305.8	209.5	49.2	258.7
1983	308.1	21.2	329.3	225.8	52.8	278.6
1984	333.8	23.4	357.2	240.5	60.2	300.7
1985E	368.5	24.8	393.3	268.4	64.8	333.2
<u>Forecast</u>						
1986	387.3	25.8	413.1	282.1	67.7	349.8
1987	413.9	26.9	440.8	302.1	70.9	373.0
1988	436.1	28.2	464.3	318.9	74.5	393.4
1989	457.0	29.7	486.7	335.0	78.5	413.5
1990	469.4	30.9	500.3	345.5	82.0	427.5
1991	497.4	32.8	530.2	366.6	87.4	454.0
1992	521.1	34.7	555.8	385.2	92.6	477.8
1993	543.1	36.6	579.7	402.6	97.7	500.3
1994	570.1	38.4	608.5	423.9	102.8	526.7
1995	598.0	40.3	638.3	445.9	108.0	553.9
1996	612.4	42.1	654.5	459.3	113.2	572.5
1997	648.6	44.5	693.1	486.7	119.7	606.4

* Source: RSPA, Forms 41 and 298-C

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TABLE 2

UNITED STATES COMMERCIAL AIR CARRIERS
SCHEDULED PASSENGER TRAFFIC

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS (Millions)			REVENUE PASSENGER MILES (Billions)		
	DOMESTIC	INTERNATIONAL	TOTAL	DOMESTIC	INTERNATIONAL	TOTAL
<u>Historical*</u>						
1980	278.2	24.1	302.3	203.2	54.2	257.4
1981	264.3	21.2	285.5	198.0	50.3	248.3
1982	272.8	19.7	292.5	207.8	49.2	257.0
1983	290.3	21.1	311.4	223.6	52.8	276.4
1984	313.4	23.3	336.7	237.7	60.3	298.0
1985E	348.4	24.6	373.0	265.6	64.8	330.4
<u>Forecast</u>						
1986	365.8	25.6	391.4	278.8	67.7	346.5
1987	390.4	26.7	417.1	298.3	70.9	369.2
1988	410.3	28.0	438.3	314.7	74.5	389.2
1989	429.1	29.4	458.5	330.4	78.5	408.9
1990	440.2	30.6	470.8	340.6	82.0	422.6
1991	465.6	32.5	498.1	361.3	87.3	448.6
1992	487.0	34.4	521.4	379.4	92.5	471.9
1993	506.9	36.2	543.1	396.4	97.6	494.0
1994	531.5	38.0	569.5	417.2	102.7	519.9
1995	556.7	39.9	596.6	438.7	107.8	546.5
1996	571.2	41.7	612.9	451.8	113.0	564.8
1997	602.8	44.0	646.8	478.6	119.4	598.0

* Source: RSPA, Form 41

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TABLE 3

UNITED STATES COMMERCIAL AIR CARRIERS
SCHEDULED PASSENGER CAPACITY, TRAFFIC AND LOAD FACTORS

FISCAL YEAR	DOMESTIC			INTERNATIONAL		
	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR	ASM'S (BIL)	RPM'S (BIL)	% LOAD FACTOR
<u>Historical*</u>						
1980	349.0	203.2	58.2	86.8	54.2	62.5
1981	343.4	198.0	57.7	79.5	50.3	63.3
1982	355.9	207.8	58.4	79.6	49.2	61.8
1983	374.4	223.6	59.7	82.6	52.8	64.0
1984	411.7	237.7	57.8	91.1	60.3	66.2
1985E	436.1	265.6	60.9	98.5	64.8	65.8
<u>Forecast</u>						
1986	466.6	278.8	59.8	106.0	67.7	63.9
1987	489.9	298.3	60.9	111.8	70.9	63.4
1988	514.4	314.7	61.2	118.0	74.5	63.1
1989	537.5	330.4	61.5	124.0	78.5	63.3
1990	561.7	340.6	60.6	130.2	82.0	63.0
1991	586.9	361.3	61.6	137.0	87.3	63.7
1992	613.3	379.4	61.9	143.9	92.5	64.3
1993	639.0	396.4	62.0	150.5	97.6	64.9
1994	666.1	417.2	62.6	157.4	102.7	65.3
1995	694.7	438.7	63.2	164.7	107.8	65.5
1996	724.1	451.8	62.4	172.2	113.0	65.6
1997	754.8	478.6	63.4	180.1	119.4	66.3

* Source: RSPA, Form 41

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TABLE 4

UNITED STATES COMMERCIAL AIR CARRIERS
LARGE JET AIRCRAFT

AS OF JANUARY 1	NARROW BODY			WIDE BODY			TOTAL
	2 ENGINE	3 ENGINE	4 ENGINE	2 ENGINE	3 ENGINE	4 ENGINE	
<u>Historical*</u>							
1980	615	1,029	380	12	227	131	2,394
1981	663	1,097	297	19	255	144	2,475
1982	730	1,096	218	25	267	147	2,483
1983	839	1,057	199	43	277	141	2,556
1984	962	1,122	161	83	271	146	2,745
1985	1,074	1,161	179	91	277	156	2,938
<u>Forecast</u>							
1986	1,206	1,150	124	109	281	161	3,031
1987	1,331	1,108	132	119	283	164	3,137
1988	1,453	1,055	136	147	286	172	3,249
1989	1,544	990	138	194	286	181	3,333
1990	1,645	917	135	237	287	191	3,412
1991	1,742	836	133	279	288	200	3,478
1992	1,831	787	131	317	290	210	3,566
1993	1,915	737	129	362	292	222	3,657
1994	2,003	684	127	397	294	235	3,740
1995	2,092	631	126	432	296	249	3,826
1996	2,165	577	125	472	298	263	3,900
1997	2,240	522	121	517	299	277	3,976

* Source: FAA Aircraft Utilization and Propulsion Reliability Report

TABLE 5

UNITED STATES COMMERCIAL AIR CARRIERS
TOTAL AIRBORNE HOURS
(Thousands)

FISCAL YEAR	NARROW BODY			WIDE BODY			TOTAL
	2 ENGINE	3 ENGINE	4 ENGINE	2 ENGINE	3 ENGINE	4 ENGINE	
<u>Historical*</u>							
1980	1,579	2,994	691	38	712	525	6,539
1981	1,673	2,806	388	58	716	501	6,142
1982	1,860	2,635	254	67	742	510	6,068
1983	2,183	2,573	319	160	747	533	6,515
1984	2,543	2,805	284	260	771	545	7,208
1985E	2,713	2,782	323	298	797	500	7,413
<u>Forecast</u>							
1986	3,043	2,709	275	336	797	550	7,710
1987	3,400	2,633	291	368	801	560	8,053
1988	3,716	2,529	301	461	807	588	8,402
1989	3,969	2,401	305	616	807	639	8,737
1990	4,245	2,252	302	759	810	652	9,020
1991	4,514	2,086	299	896	813	682	9,290
1992	4,762	1,975	296	1,019	820	717	9,589
1993	4,999	1,856	294	1,167	827	758	9,901
1994	5,250	1,731	291	1,283	834	803	10,192
1995	5,507	1,601	290	1,398	842	851	10,489
1996	5,722	1,474	289	1,529	849	900	10,763
1997	5,942	1,327	279	1,676	852	948	11,024

* Source: RSPA, Form 41

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TABLE 6

U.S. REGIONAL/COMMUTER AIR CARRIERS
SCHEDULED PASSENGER TRAFFIC
(Millions)

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS			REVENUE PASSENGER MILES		
	48 STATES	HAWAII/ PUERTO RICO/ VIRGIN ISLANDS	TOTAL	48 STATES	HAWAII/ PUERTO RICO/ VIRGIN ISLANDS	TOTAL
<u>Historical*</u>						
1980	12.4	1.5	13.9	1,676.1	107.8	1,783.9
1981	14.2	1.8	16.0	2,004.0	136.8	2,140.8
1982	15.6	2.2	17.8	2,278.3	187.4	2,465.7
1983	17.8	2.5	20.3	2,703.1	240.1	2,943.2
1984	20.9	2.8	23.7	3,334.3	276.8	3,611.1
1985E	21.7	2.5	24.2	3,564.0	250.3	3,814.3
<u>Forecast</u>						
1986	23.2	2.7	25.9	3,920.8	271.4	4,192.2
1987	25.3	2.9	28.2	4,376.9	292.9	4,669.8
1988	27.7	3.2	30.9	4,889.1	316.8	5,205.9
1989	30.0	3.5	33.5	5,400.0	346.5	5,746.5
1990	31.2	3.8	35.0	5,709.6	376.2	6,085.8
1991	34.0	4.1	38.1	6,324.0	405.9	6,729.9
1992	36.3	4.4	40.7	6,842.6	435.6	7,278.2
1993	38.6	4.7	43.3	7,372.6	465.3	7,837.9
1994	41.0	5.0	46.0	7,933.5	495.0	8,428.5
1995	43.8	5.3	49.1	8,562.9	524.7	9,087.6
1996	45.2	5.6	50.8	8,927.0	554.4	9,481.4
1997	48.6	5.9	54.5	9,695.7	584.1	10,279.8

* Source: RSPA, Form 298-C

E = Estimate

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TABLE 7

U.S. REGIONAL/COMMUTER AIR CARRIERS
PASSENGER AIRCRAFT

AS OF JANUARY 1	LESS THAN 15 SEATS	15 - 19 SEATS	20 - 40 SEATS	MORE THAN 40 SEATS	TOTAL
<u>Historical*</u>					
1980	861	365	101	86	1413
1981	734	383	99	97	1313
1982	716	433	117	122	1388
1983	701	493	125	175	1494
1984	569	533	147	172	1421
1985E	618	560	154	203	1535
<u>Forecast</u>					
1986	620	567	176	209	1572
1987	592	580	198	216	1586
1988	575	595	240	230	1640
1989	551	610	315	250	1726
1990	541	618	392	270	1821
1991	510	628	475	296	1909
1992	502	642	507	327	1978
1993	480	654	536	361	2031
1994	441	668	568	399	2076
1995	401	683	597	441	2122
1996	359	693	639	493	2184
1997	320	714	670	541	2245

* Source: FAA Aircraft Utilization and Propulsion Reliability Report

E = Estimate

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TABLE 8

ACTIVE GENERAL AVIATION AIRCRAFT
(Thousands)

AS OF JANUARY 1	FIXED WING				ROTORCRAFT		OTHER	TOTAL
	PISTON		TURBOPROP	TURBOJET	PISTON	TURBINE		
	SINGLE ENGINE	MULTI- ENGINE						
<u>Historical*</u>								
1980	168.4	25.1	3.5	2.7	3.1	2.7	4.8	210.3
1981	168.4	24.6	4.1	3.0	2.8	3.2	4.9	211.0
1982	167.9	25.5	4.7	3.2	3.3	3.7	5.0	213.3
1983	164.2	25.0	5.2	4.0	2.4	3.7	5.2	209.7
1984	166.4	25.1	5.5	3.9	2.5	4.0	5.9	213.3
1985	171.9	25.5	5.8	4.3	2.9	4.2	6.3	220.9
<u>Forecast</u>								
1986	166.4	25.6	6.1	4.6	2.8	4.6	6.4	216.5
1987	166.9	26.0	6.4	4.9	2.8	5.0	6.7	218.7
1988	167.9	26.4	6.6	5.2	2.7	5.3	7.0	221.1
1989	169.6	26.9	6.9	5.5	2.6	5.6	7.3	224.4
1990	172.4	27.3	7.2	5.7	2.6	6.0	7.6	228.8
1991	175.8	27.7	7.5	5.9	2.5	6.3	7.9	233.6
1992	178.7	28.0	7.8	6.2	2.5	6.8	8.3	238.3
1993	182.0	28.3	8.1	6.5	2.5	7.1	8.6	243.1
1994	185.3	28.6	8.4	6.7	2.4	7.7	8.9	248.0
1995	188.9	28.9	8.7	6.9	2.4	8.0	9.2	253.0
1996	191.0	29.2	9.0	7.1	2.3	8.3	9.5	256.4
1997	193.2	29.5	9.3	7.3	2.2	8.6	9.7	259.8

* Source: FAA Statistical Handbook of Aviation

Notes: Detail may not add to total because of independent rounding.

An active aircraft must have a current registration and it must have been flown at least one hour during the previous calendar year.

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TABLE 9

ACTIVE GENERAL AVIATION AIRCRAFT
BY FAA REGION
(Thousands)

AS OF JANUARY 1	FAA REGION									TOTAL
	ANE	AEA	ASO	AGL	ACE	ASW	AWP	ANM	AAL	
<u>Historical*</u>										
1980	7.4	22.9	29.7	39.7	14.1	30.9	35.3	24.4	5.9	210.3
1981	7.4	23.0	29.8	39.9	14.1	31.0	35.4	24.5	5.9	211.0
1982**	7.0	21.2	32.1	40.0	14.0	32.2	36.7	23.8	6.2	213.2
1983	7.7	22.8	32.2	37.0	12.8	34.0	34.4	22.1	6.8	209.8
1984	7.8	23.2	32.7	37.6	13.0	34.6	35.0	22.5	6.9	213.3
1985E	8.2	23.9	33.3	38.8	13.1	34.6	37.6	23.8	7.6	220.9
<u>Forecast</u>										
1986	8.1	23.4	32.6	38.1	12.8	33.9	36.9	23.3	7.4	216.5
1987	8.2	23.6	32.9	38.5	12.9	34.2	37.3	23.5	7.6	218.7
1988	8.3	23.9	33.3	38.9	13.1	34.6	37.7	23.7	7.6	221.1
1989	8.4	24.3	33.8	39.5	13.3	35.1	38.2	24.1	7.7	224.4
1990	8.6	24.8	34.5	40.3	13.5	35.8	38.9	24.6	7.8	228.8
1991	8.7	25.3	35.2	41.1	13.8	36.6	39.8	25.2	7.9	233.6
1992	8.9	25.8	35.9	41.9	14.1	37.3	40.6	25.6	8.1	238.3
1993	9.1	26.3	36.6	42.8	14.4	38.1	41.4	26.2	8.3	243.1
1994	9.3	26.8	37.3	43.6	14.7	38.8	42.3	26.7	8.7	248.2
1995	9.5	27.3	38.1	44.6	14.9	39.6	43.1	27.2	8.7	253.0
1996	9.6	27.7	38.6	45.1	15.1	40.2	43.7	27.6	8.8	256.4
1997	9.7	28.1	39.1	45.7	15.4	40.7	44.3	27.9	8.9	259.8

* Source: FAA Statistical Handbook of Aviation

** Regional totals were adjusted so that they sum to the national total.

Notes: Detail may not add to total because of independent rounding.

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TABLE 10

GENERAL AVIATION HOURS FLOWN
(Millions)

FISCAL YEAR	FIXED WING							TOTAL
	PISTON		TURBOPROP	TURBOJET	ROTORCRAFT		OTHER	
	SINGLE ENGINE	MULTI- ENGINE			PISTON	TURBINE		
<u>Historical*</u>								
1980	28.8	6.6	2.1	1.3	.8	1.6	.4	41.6
1981	27.9	6.4	2.2	1.5	.9	1.8	.4	41.1
1982	25.2	6.0	2.1	1.6	.7	1.8	.4	37.8
1983	23.8	5.8	2.2	1.5	.6	2.1	.4	36.4
1984	23.4	5.7	2.4	1.6	.6	1.9	.4	35.9
1985E	23.4	5.7	2.6	1.8	.6	2.1	.4	36.6
<u>Forecast</u>								
1986	23.6	5.8	2.7	1.8	.6	2.3	.4	37.3
1987	24.1	5.9	2.8	1.9	.5	2.4	.5	38.1
1988	24.6	6.0	2.9	2.0	.5	2.6	.5	39.1
1989	25.5	6.1	3.1	2.1	.5	2.8	.5	40.6
1990	26.5	6.2	3.2	2.1	.5	2.9	.6	42.0
1991	27.3	6.2	3.4	2.2	.5	3.1	.6	43.3
1992	28.2	6.3	3.5	2.3	.5	3.3	.6	44.7
1993	29.1	6.4	3.6	2.3	.4	3.5	.6	45.9
1994	29.9	6.4	3.7	2.4	.4	3.7	.6	47.1
1995	30.5	6.5	3.9	2.5	.4	3.8	.6	48.2
1996	30.9	6.6	4.0	2.5	.4	4.0	.7	49.0
1997	31.1	6.6	4.1	2.6	.4	4.1	.7	49.6

* Source: FAA Statistical Handbook of Aviation

E = Estimate

Notes: Detail may not add to total because of independent rounding.

TABLE 11

ACTIVE ROTORCRAFT FLEET AND HOURS FLOWN

AS OF JANUARY 1	ACTIVE FLEET (Thousands)			HOURS FLOWN(1) (Millions)		
	PISTON	TURBINE	TOTAL	PISTON	TURBINE	TOTAL
<u>Historical*</u>						
1980	3.1	2.7	5.8	.8	1.6	2.4
1981	2.8	3.2	6.0	.9	1.8	2.7
1982	3.3	3.7	7.0	.7	1.8	2.5
1983	2.4	3.7	6.1	.6	2.1	2.7
1984	2.5	4.0	6.5	.6	1.9	2.5
1985E	2.9	4.2	7.1	.6	2.1	2.7
<u>Forecast</u>						
1986	2.8	4.6	7.4	.6	2.3	2.9
1987	2.8	5.0	7.8	.5	2.4	2.9
1988	2.7	5.3	8.0	.5	2.6	3.1
1989	2.6	5.6	8.2	.5	2.8	3.3
1990	2.6	6.0	8.6	.5	2.9	3.4
1991	2.5	6.3	8.8	.5	3.1	3.6
1992	2.5	6.8	9.3	.5	3.3	3.8
1993	2.5	7.1	9.6	.4	3.5	3.9
1994	2.4	7.7	10.1	.4	3.7	4.1
1995	2.4	8.0	10.4	.4	3.8	4.2
1996	2.3	8.3	10.6	.4	4.0	4.4
1997	2.2	8.6	10.8	.4	4.1	4.5

* Source: FAA Statistical Handbook of Aviation

(1) Helicopter hours flown are on a fiscal year basis.

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TABLE 12

GENERAL AVIATION AIRCRAFT FUEL CONSUMPTION
(Millions of Gallons)

FISCAL YEAR	FIXED WING					ROTORCRAFT		OTHER	TOTAL
	Piston		TURBOPROP	TURBOJET	PISTON	TURBINE			
	SINGLE ENGINE	MULTI- ENGINE							
<u>Historical*</u>									
1980	287.6	231.1	223.9	474.6	13.3	59.7	.8	1,291.0	
1981	276.5	206.1	219.6	483.2	13.3	57.8	.8	1,257.3	
1982	251.2	197.4	230.8	562.1	9.7	62.5	.5	1,314.2	
1983	235.1	189.3	230.9	396.2	7.8	54.2	.4	1,113.9	
1984	248.8	196.3	236.4	408.0	8.5	62.9	.2	1,161.1	
1985E	233.1	187.5	247.8	552.6	8.3	72.9	.5	1,302.7	
<u>Forecast</u>									
1986	235.1	190.8	257.1	553.0	8.3	79.8	.5	1,324.6	
1987	240.0	194.1	266.6	583.3	6.9	83.3	.5	1,374.7	
1988	245.1	197.4	276.1	614.0	6.9	90.2	.5	1,430.2	
1989	253.9	200.7	295.1	644.7	6.9	97.2	.5	1,499.0	
1990	263.9	203.9	304.6	645.0	6.9	100.6	.6	1,525.5	
1991	271.9	204.0	323.7	675.4	6.9	107.6	.6	1,590.1	
1992	280.9	207.3	333.2	706.1	6.9	114.5	.6	1,649.5	
1993	289.8	210.6	342.7	707.0	5.5	121.5	.6	1,677.7	
1994	297.8	211.0	352.2	736.8	5.5	128.4	.6	1,732.3	
1995	303.8	213.9	371.3	765.5	5.4	131.9	.6	1,792.4	
1996	306.8	217.1	380.8	769.0	5.4	138.8	.7	1,818.6	
1997	309.8	217.2	390.3	798.2	5.3	142.3	.7	1,863.8	

* Source: FAA APO Estimates

E = Estimate

TABLE 13

UNITED STATES CIVIL AVIATION AIRCRAFT FUEL CONSUMPTION
(Millions of Gallons)

FISCAL YEAR	JET FUEL					AVIATION GASOLINE			TOTAL FUEL CONSUMED
	U.S. AIR CARRIERS			GENERAL		AIR CARRIER	GENERAL		
	DOMESTIC	INT'L.	TOTAL	AVIATION	TOTAL		AVIATION	TOTAL	
<u>Historical*</u>									
1980	9,126	2,136	11,262	777	12,039	13	533	546	12,585
1981	8,376	1,881	10,257	761	11,018	11	497	508	11,526
1982	8,242	1,797	10,039	855	10,894	9	458	467	11,361
1983	8,697	1,972	10,669	681	11,350	7	433	440	11,790
1984	9,478	2,176	11,654	707	12,361	6	445	451	12,812
1985E	9,906	2,387	12,293	873	13,166	5	429	434	13,600
<u>Forecast</u>									
1986	10,440	2,490	12,930	890	13,820	5	435	440	14,260
1987	10,800	2,590	13,390	933	14,323	4	442	446	14,769
1988	11,110	2,680	13,790	980	14,770	3	450	453	15,223
1989	11,380	2,760	14,140	1,037	15,177	2	462	464	15,641
1990	11,660	2,830	14,490	1,050	15,540	2	475	477	16,017
1991	11,950	2,900	14,850	1,107	15,957	2	483	485	16,442
1992	12,180	2,980	15,160	1,153	16,313	2	496	498	16,811
1993	12,380	3,040	15,420	1,171	16,591	2	507	509	17,100
1994	12,590	3,100	15,690	1,217	16,907	2	515	517	17,424
1995	12,810	3,160	15,970	1,268	17,238	2	524	526	17,764
1996	13,030	3,230	16,260	1,289	17,549	2	530	532	18,081
1997	13,250	3,300	16,550	1,331	17,881	2	533	535	18,416

* Source: Air carrier jet fuel, RSPA Form 41; All other, FAA APO estimates

E = Estimate

TABLE 14

TOTAL ITINERANT AND LOCAL AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE
(Millions)

FISCAL YEAR	ITINERANT	LOCAL	TOTAL	NUMBER OF TOWERS
<u>Historical*</u>				
1980	44.3	21.9	66.2	432
1981	42.0	19.5	61.5	433
1982	36.0	14.7	50.6	375
1983	38.0	15.3	53.3	390
1984	41.0	15.8	56.8	403
1985E	41.9	16.0	57.9	398
<u>Forecast</u>				
1986	43.4	16.4	59.8	395
1987	45.0	16.8	61.8	390
1988	46.5	17.4	63.9	385
1989	48.1	18.0	66.1	385
1990	49.7	18.8	68.5	385
1991	51.5	19.4	70.9	385
1992	53.1	20.1	73.2	385
1993	54.9	20.8	75.7	385
1994	56.5	21.4	77.9	385
1995	58.0	22.1	80.1	385
1996	59.3	22.9	82.2	385
1997	61.0	23.5	84.5	385

* Source: FAA Air Traffic Activity.

Notes: 1982-1984 operations reflect the temporary closures of FAA Air Traffic Control Towers. Detail may not add to total because of independent rounding.

TABLE 15

ITINERANT AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE
(Millions)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
<u>Historical*</u>					
1980	10.1	4.6	28.3	1.2	44.2
1981	9.5	4.9	26.4	1.2	42.0
1982	9.0	5.1	20.7	1.1	36.0
1983	9.7	5.9	21.3	1.2	38.0
1984	10.9	6.6	22.2	1.2	41.0
1985E	11.3	6.9	22.4	1.3	41.9
<u>Forecast</u>					
1986	11.9	7.3	22.9	1.3	43.4
1987	12.3	7.6	23.8	1.3	45.0
1988	12.7	8.0	24.5	1.3	46.5
1989	13.1	8.3	25.4	1.3	48.1
1990	13.4	8.7	26.3	1.3	49.7
1991	13.7	9.1	27.4	1.3	51.5
1992	14.0	9.4	28.4	1.3	53.1
1993	14.3	9.8	29.5	1.3	54.9
1994	14.6	10.2	30.4	1.3	56.5
1995	14.8	10.5	31.4	1.3	58.0
1996	15.0	10.9	32.1	1.3	59.3
1997	15.2	11.2	33.3	1.3	61.0

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of independent rounding.

TABLE 16

LOCAL AIRCRAFT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE
(Millions)

FISCAL YEAR	GENERAL AVIATION	MILITARY	TOTAL
<u>Historical*</u>			
1980	20.6	1.3	21.9
1981	18.2	1.3	19.5
1982	13.5	1.2	14.7
1983	14.0	1.3	15.3
1984	14.6	1.2	15.8
1985E	14.8	1.2	16.0
<u>Forecast</u>			
1986	15.2	1.2	16.4
1987	15.6	1.2	16.8
1988	16.2	1.2	17.4
1989	16.8	1.2	18.0
1990	17.6	1.2	18.8
1991	18.2	1.2	19.4
1992	18.9	1.2	20.1
1993	19.6	1.2	20.8
1994	20.2	1.2	21.4
1995	20.9	1.2	22.1
1996	21.7	1.2	22.9
1997	22.3	1.2	23.5

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of independent rounding.

TABLE 17

INSTRUMENT OPERATIONS
AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE
(Millions)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL	
<u>Historical*</u>						
1980	10.6	4.1	19.3	4.1	38.2	(10.2)
1981	10.2	4.6	18.5	3.9	37.2	(9.6)
1982	9.5	4.6	13.9	3.6	31.7	(6.5)
1983	10.1	5.3	14.8	3.8	34.0	(7.0)
1984	11.3	6.0	16.0	4.0	37.3	(7.8)
1985E	11.8	6.4	16.4	4.1	38.7	(8.0)
<u>Forecast</u>						
1986	12.5	6.8	17.2	4.1	40.6	(8.6)
1987	12.9	7.2	18.1	4.1	42.3	(9.2)
1988	13.3	7.5	18.9	4.1	43.8	(9.8)
1989	13.7	7.9	20.0	4.1	45.7	(10.6)
1990	14.0	8.3	20.9	4.1	47.3	(11.3)
1991	14.3	8.7	21.4	4.1	48.5	(11.5)
1992	14.6	9.2	21.6	4.1	49.5	(11.5)
1993	14.9	9.5	21.9	4.1	50.4	(11.5)
1994	15.2	9.9	22.1	4.1	51.3	(11.5)
1995	15.4	10.3	22.4	4.1	52.2	(11.5)
1996	15.6	10.7	22.6	4.1	53.0	(11.5)
1997	15.8	11.0	22.9	4.1	53.8	(11.5)

* Source: FAA Air Traffic Activity.

Notes: Non-IFR instrument counts at Terminal Control Area (TCA) facilities and expanded area radar service are included in the totals and noted in parenthesis as an information item (see Table 18).

The data include instrument operations at FAA operated military radar approach control facilities. Detail may not add to total because of independent rounding.

TABLE 18

NON-IFR INSTRUMENT OPERATIONS
(Millions)

FISCAL YEAR	TERMINAL CONTROL AREAS	EXPANDED RADAR SERVICE AREA STAGE II, STAGE III, ARSA	TOTAL
<u>Historical*</u>			
1980	2.7	7.6	10.3
1981	2.8	6.8	9.6
1982	1.9	4.6	6.5
1983	2.3	4.7	7.0
1984	2.4	5.4	7.8
1985E	2.0	6.0	8.0
<u>Forecast</u>			
1986	2.1	6.5	8.6
1987	2.1	7.1	9.2
1988	2.2	7.6	9.8
1989	2.2	8.4	10.6
1990	2.2	9.1	11.3
1991	2.3	9.2	11.5
1992	2.3	9.2	11.5
1993	2.3	9.2	11.5
1994	2.3	9.2	11.5
1995	2.3	9.2	11.5
1996	2.3	9.2	11.5
1997	2.3	9.2	11.5

* Source: FAA Air Traffic Activity.

Notes: 1982-1983 operations reflect the temporary termination of Stage III Service at 34 locations.

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TABLE 19

IFR AIRCRAFT HANDLED
AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS
(Millions)

FISCAL YEAR	TOTAL			AIRCRAFT HANDLED			
	AIRCRAFT HANDLED	IFR DEPARTURES	OVERS	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY
<u>Historical*</u>							
1980	30.1	11.7	6.7	13.9	2.6	8.9	4.7
1981	29.5	11.5	6.5	13.0	2.9	9.0	4.7
1982	27.9	10.7	6.4	12.7	3.3	7.5	4.3
1983	29.4	11.3	6.8	13.3	3.7	7.8	4.6
1984	31.6	12.3	7.0	14.1	4.4	8.3	4.9
1985E	32.7	12.8	7.1	14.6	4.8	8.3	5.0
<u>Forecast</u>							
1986	34.0	13.4	7.2	15.4	5.1	8.5	5.0
1987	35.1	13.9	7.3	15.9	5.5	8.7	5.0
1988	36.1	14.4	7.3	16.3	5.9	8.9	5.0
1989	37.2	14.9	7.4	16.8	6.3	9.1	5.0
1990	38.4	15.4	7.5	17.3	6.7	9.3	5.0
1991	39.4	15.9	7.6	17.7	7.0	9.7	5.0
1992	40.5	16.4	7.7	18.2	7.4	9.9	5.0
1993	41.5	16.9	7.7	18.6	7.8	10.1	5.0
1994	42.6	17.4	7.8	19.1	8.2	10.3	5.0
1995	43.6	17.9	7.8	19.5	8.6	10.5	5.0
1996	44.5	18.3	7.9	19.8	9.0	10.7	5.0
1997	45.3	18.7	7.9	20.0	9.4	10.9	5.0

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of independent rounding.

TABLE 20

IFR DEPARTURES AND OVERS
AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS
(Millions)

FISCAL YEAR	AIR CARRIER		AIR TAXI/COMMUTER		GENERAL AVIATION		MILITARY	
	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS
<u>Historical*</u>								
1980	4.9	4.0	1.2	0.1	3.9	1.2	1.7	1.4
1981	4.6	3.8	1.4	0.1	3.9	1.2	1.6	1.4
1982	4.4	3.8	1.6	0.2	3.2	1.2	1.5	1.3
1983	4.7	4.0	1.7	0.2	3.3	1.2	1.6	1.4
1984	5.0	4.1	2.0	0.3	3.5	1.3	1.7	1.4
1985E	5.2	4.1	2.2	0.3	3.5	1.3	1.8	1.4
<u>Forecast</u>								
1986	5.6	4.2	2.4	0.3	3.6	1.3	1.8	1.4
1987	5.8	4.3	2.6	0.3	3.7	1.3	1.8	1.4
1988	6.0	4.3	2.8	0.3	3.8	1.3	1.8	1.4
1989	6.2	4.4	3.0	0.3	3.9	1.3	1.8	1.4
1990	6.4	4.5	3.2	0.3	4.0	1.3	1.8	1.4
1991	6.6	4.5	3.3	0.4	4.2	1.3	1.8	1.4
1992	6.8	4.6	3.5	0.4	4.3	1.3	1.8	1.4
1993	7.0	4.6	3.7	0.4	4.4	1.3	1.8	1.4
1994	7.2	4.7	3.9	0.4	4.5	1.3	1.8	1.4
1995	7.4	4.7	4.1	0.4	4.6	1.3	1.8	1.4
1996	7.5	4.8	4.3	0.4	4.7	1.3	1.8	1.4
1997	7.6	4.8	4.5	0.4	4.8	1.3	1.8	1.4

* Source: FAA Air Traffic Activity.

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TABLE 21

TOTAL FLIGHT SERVICES, PILOT BRIEFS AND FLIGHT PLANS ORIGINATED
AT FAA FLIGHT SERVICE STATIONS AND COMBINED STATION/TOWERS
(Millions)

FISCAL YEAR	FLIGHT PLANS ORIGINATED			PILOT BRIEFS	Total
	IFR-DVFR	VFR	TOTAL		FLIGHT SERVICES
<u>Historical*</u>					
1980	6.6	2.4	9.0	18.3	64.2
1981	6.5	2.3	8.8	17.7	62.6
1982	6.5	2.0	8.5	17.8	62.4
1983	6.3	1.9	8.1	16.0	56.9
1984	6.4	1.8	8.2	15.1	54.7
1985E	6.3	1.7	8.0	14.6	52.9
<u>Forecast</u>					
1986	6.5	1.8	8.3	15.1	54.6
1987	6.8	1.9	8.7	15.6	56.5
1988	7.1	1.9	9.0	16.1	58.4
1989	7.3	2.0	9.3	16.8	60.4
1990	7.6	2.0	9.6	17.4	62.3
1991	7.9	2.1	10.0	17.8	64.0
1992	8.1	2.2	10.3	18.3	65.6
1993	8.4	2.2	10.6	18.7	67.1
1994	8.6	2.3	10.9	19.1	68.5
1995	8.9	2.3	11.2	19.5	69.9
1996	9.1	2.3	11.4	19.9	71.2
1997	9.3	1.4	11.7	20.2	72.4

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of independent rounding.

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TABLE 22

AIRCRAFT CONTACTED
AT FAA FLIGHT SERVICE STATIONS AND COMBINED STATION/TOWERS

(Millions)

FISCAL YEAR	USER CATEGORY					FLIGHT RULES		TOTAL
	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	IFR-DVFR	VFR		
<u>Historical*</u>								
1980	0.4	0.9	7.9	0.4	2.0	7.7	9.6	
1981	0.4	0.9	7.9	0.4	2.0	7.6	9.6	
1982	0.4	1.2	7.7	0.4	2.5	7.2	9.7	
1983	0.4	1.1	6.6	0.4	2.3	6.3	8.6	
1984	0.4	1.1	6.3	0.4	2.3	5.9	8.1	
1985E	0.4	1.1	5.8	0.4	2.2	5.5	7.7	
<u>Forecast</u>								
1986	0.4	1.1	5.9	0.4	2.3	5.5	7.8	
1987	0.3	1.2	6.0	0.4	2.4	5.5	7.9	
1988	0.3	1.2	6.3	0.4	2.5	5.7	8.2	
1989	0.3	1.2	6.3	0.4	2.5	5.7	8.2	
1990	0.3	1.2	6.4	0.4	2.6	5.7	8.3	
1991	0.3	1.2	6.5	0.4	2.7	5.7	8.4	
1992	0.3	1.2	6.5	0.4	2.7	5.7	8.4	
1993	0.3	1.2	6.6	0.4	2.7	5.8	8.5	
1994	0.3	1.2	6.6	0.4	2.7	5.8	8.5	
1995	0.3	1.2	6.6	0.4	2.7	5.8	8.5	
1996	0.3	1.2	6.7	0.4	2.8	5.8	8.6	
1997	0.3	1.2	6.7	0.4	2.8	5.8	8.6	

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of independent rounding.

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TABLE 23

ACTIVE PILOTS BY TYPE OF CERTIFICATE
(Thousands)

AS OF JANUARY 1	STUDENTS	PRIVATE	COMMERCIAL	AIRLINE TRANSPORT	HELICOPTER	GLIDER	LIGHTER- THAN-AIR	TOTAL	INSTRUMENT RATED(1)
<u>Historical*</u>									
1980	210.2	343.3	182.1	63.7	5.2	6.8	3.4	814.7	247.1
1981	199.8	357.5	183.4	69.6	6.0	7.0	3.7	827.0	260.5
1982	179.9	328.6	168.6	70.3	6.5	7.4	3.0	764.2	252.5
1983	156.4	322.1	165.1	73.5	7.0	7.8	1.4	733.3	255.1
1984	147.2	318.6	159.5	75.9	7.2	8.2	1.3	718.0	254.3
1985	150.1	320.1	155.9	79.2	7.5	8.4	1.2	722.4	256.6
<u>Forecast</u>									
1986	153.0	321.6	157.1	82.2	7.9	8.8	1.3	731.9	259.3
1987	155.9	323.1	158.4	85.2	8.2	9.1	1.3	741.2	260.8
1988	158.8	324.6	159.7	88.1	8.5	9.5	1.4	750.6	262.3
1989	161.7	326.1	161.3	91.0	8.8	9.8	1.5	760.2	263.8
1990	164.6	327.6	162.9	93.9	9.1	10.2	1.7	770.0	265.2
1991	167.5	329.1	164.5	96.9	9.4	10.5	1.8	779.7	266.7
1992	170.4	330.6	166.2	99.8	9.7	10.8	1.9	789.4	268.2
1993	173.3	332.1	167.8	102.7	10.0	11.2	2.0	799.1	269.7
1994	176.2	333.6	169.5	105.6	10.3	11.5	2.1	808.8	271.1
1995	179.1	335.1	171.2	108.6	10.6	11.9	2.2	818.7	272.6
1996	182.0	336.6	172.9	111.5	10.9	12.2	2.3	828.4	274.1
1997	184.9	338.1	174.7	114.4	11.2	12.6	2.3	838.2	275.6

* Source: FAA Statistical Handbook of Aviation.

(1) Instrument rated pilots should not be added to other categories in deriving total.

Notes: Detail may not add to total because of independent rounding.

TABLE 24

ACTIVE U.S. MILITARY AIRCRAFT
IN CONTINENTAL UNITED STATES (1)

FISCAL YEAR	FIXED WING AIRCRAFT			HELICOPTER	TOTAL
	JET	TURBOPROP	PISTON		
<u>Historical*</u>					
1980	8,794	1,869	699	7,607	18,969
1981	9,111	1,943	591	7,718	19,363
1982	9,647	1,900	516	9,665	21,728
1983	9,495	1,745	363	7,049	18,652
1984	9,551	1,777	333	7,172	18,833
1985E	9,654	1,821	393	7,253	19,121
<u>Forecast</u>					
1986	9,698	1,855	382	7,320	19,255
1987	9,786	1,915	356	7,475	19,532
1988	9,852	1,946	353	7,477	19,628
1989	9,927	1,967	340	7,634	19,868
1990	9,970	1,987	331	7,575	19,863
1991	9,992	1,971	325	7,608	19,896
1992	10,162	1,997	327	7,637	20,123
1993	10,355	1,996	328	7,653	20,332
1994(2)	10,355	1,996	328	7,653	20,332
1995	10,355	1,996	328	7,653	20,332
1996	10,355	1,996	328	7,653	20,332
1997	10,355	1,996	328	7,653	20,332

* Source: Office of the Secretary of Defense, Department of Defense.

(1) Includes Army, Air Force, Navy and Marine regular service aircraft, as well as Reserve and National Guard aircraft.

(2) Detail planning information not available beyond 1993. Fiscal Years 1994 through 1997 projected at 1993 level.

TABLE 25

ACTIVE U.S. MILITARY AIRCRAFT
FLYING HOURS IN CONTINENTAL UNITED STATES(1)
(Thousands)

FISCAL YEAR	FIXED WING AIRCRAFT			HELICOPTER	TOTAL
	JET	TURBOPROP	PISTON		
<u>Historical*</u>					
1980	2,904	796	235	1,320	5,255
1981	2,966	840	253	1,791	5,850
1982	3,347	762	192	1,876	6,177
1983	3,345	746	119	1,557	5,767
1984	3,389	761	120	1,605	5,875
1985E	3,395	756	135	1,658	5,944
<u>Forecast</u>					
1986	3,493	786	140	1,714	6,133
1987	3,537	786	137	1,737	6,197
1988	3,578	785	133	1,779	6,275
1989	3,594	779	133	1,843	6,349
1990	3,593	772	132	1,838	6,335
1991	3,604	759	132	1,833	6,328
1992	3,640	761	132	1,833	6,366
1993	3,657	758	132	1,833	6,380
1994(2)	3,657	758	132	1,833	6,380
1995	3,657	758	132	1,833	6,380
1996	3,657	758	132	1,833	6,380
1997	3,657	758	132	1,833	6,380

* Source: Office of the Secretary of Defense, Department of Defense.

(1) Includes Army, Air Force, Navy and Marine regular service aircraft, as well as Reserve and National Guard aircraft.

(2) Detail planning information not available beyond 1993. Fiscal Years 1994 through 1997 projected at 1993 level.

TABLE 26

ECONOMIC ASSUMPTIONS USED IN FAA FORECASTS

FISCAL YEAR	GROSS NATIONAL PRODUCT (Billions 1972\$)	CONSUMER PRICE INDEX (1967 = 100)	OIL AND GAS DEFLATOR (1972 = 100)
<u>Historical</u>			
1980	1,477.8	239.8	322.4
1981	1,506.6	266.3	367.0
1982	1,491.9	285.5	362.2
1983	1,511.2	295.3	346.9
1984	1,616.9	304.9	341.7
1985E	1,670.7	315.9	342.9
<u>Forecast</u>			
1986	1,729.8	326.4	332.0
1987	1,799.0	339.7	317.8
1988	1,870.9	352.9	311.8
1989	1,944.5	364.9	316.5
1990	2,015.7	375.6	325.9
1991	2,087.5	384.1	333.2
1992	2,148.0*	401.8*	350.5*
1993	2,206.0*	421.1*	369.1*
1994	2,265.6*	441.7*	388.7*
1995	2,326.8*	464.2*	412.0*
1996	2,373.3*	487.4*	435.9*
1997	2,442.1*	511.8*	462.9*

Source: Office of Management and Budget, January 1986

* Based on consensus growth rates of Chase, DRI, Evans, and Wharton Forecasts contained in Table 27.

TABLE 27

ALTERNATIVE ECONOMIC FORECASTS

CALENDAR YEAR	GROSS NATIONAL PRODUCT (Billions 1972\$)				CONSUMER PRICE INDEX (1967 = 100)				FUEL PRICE INDEX (1972 = 100)			
	CHASE	DRI	EVANS	Wharton	CHASE	DRI	EVANS	WHARTON	CHASE	DRI	EVANS(1)	WHARTON
<u>Historical</u>												
1980	1,475.0	1,475.0	1,475.0	1,475.0	246.8	246.8	246.8	246.8	337.8	337.8	369.1	337.8
1981	1,512.1	1,512.1	1,512.1	1,512.1	272.4	272.4	272.4	272.4	376.4	376.4	410.9	376.4
1982	1,480.0	1,480.0	1,480.0	1,480.0	289.1	289.1	289.1	289.1	356.7	356.7	389.3	356.7
1983	1,534.7	1,534.7	1,534.7	1,534.7	298.4	298.4	298.4	298.4	344.8	344.8	376.3	344.8
1984	1,639.3	1,639.3	1,639.3	1,639.3	311.1	311.1	311.1	311.1	339.4	339.4	370.3	339.4
1985E	1,678.0	1,677.8	1,680.5	1,680.2	322.7	322.0	321.7	321.9	344.6	342.7	373.9	342.9
<u>Forecast</u>												
1986	1,722.1	1,713.6	1,749.5	1,724.7	336.2	332.9	331.9	332.6	340.2	331.7	384.1	333.3
1987	1,775.2	1,777.2	1,792.2	1,784.3	351.9	346.3	343.5	346.0	342.2	317.4	395.0	335.2
1988	1,834.1	1,832.2	1,852.9	1,837.0	369.3	361.8	355.0	361.5	359.6	324.4	409.4	343.2
134 1989	1,888.6	1,900.9	1,925.7	1,890.2	384.9	378.1	367.4	381.3	384.4	335.6	425.9	352.3
1990	1,941.4	1,965.9	1,994.2	1,889.1	403.3	396.3	381.0	401.2	411.6	355.7	443.0	360.7
1991	1,993.8	2,030.1	2,053.9	1,994.4	422.3	416.5	396.4	417.7	440.2	375.0	460.8	374.6
1992	2,046.0	2,089.5	2,112.7	2,054.8	442.3	438.6	413.3	434.2	471.0	394.5	479.3	392.3
1993	2,099.6	2,140.0	2,173.5	2,115.4	463.9	462.2	431.4	454.0	500.3	418.1	498.6	412.5
1994	2,153.6	2,188.7	2,237.2	2,182.6	486.6	487.7	450.8	475.1	527.6	446.1	518.7	433.7
1995	2,208.3*	2,241.3	2,302.0*	2,245.6	510.9*	515.9	470.6*	499.3	556.6*	489.5	539.4*	456.8
1996	2,260.1*	2,293.2	2,368.8*	2,254.6	535.8*	546.4	491.3*	522.9	586.7*	530.1	561.0*	482.6
1997	2,314.9*	2,336.6	2,437.5*	2,353.8	562.4*	580.3	513.0*	545.0	620.6*	582.7	583.5*	507.7

Source: Chase Econometrics, November 1985; Data Resources, Inc., Fall, 1985; Evans Economics, Inc., November 1985; and Wharton Econometric Associates, December 1985 (1996-97 growth rates, 20-Year Extension, August 1985)

* Extrapolated to 1997 for forecast purposes

(1) Component of CPI (1967=100)

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TABLE 28

BASELINE AIR CARRIER ASSUMPTIONS - DOMESTIC OPERATIONS

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT	AVERAGE PASSENGER TRIP LENGTH	REVENUE PER PASSENGER MILE		AVERAGE JET FUEL PRICE	
	(Number)	(Miles)	CURRENT\$	1967\$	DOMESTIC	INTERNATIONAL
			(Cents)	(Cents)	(Cents)	(Cents)
<u>Historical*</u>						
1980	139.7	730	10.82	4.51	83.2	96.8
1981	142.9	749	12.93	4.86	100.8	113.1
1982	149.8	761	12.47	4.37	99.3	109.6
1983	152.4	770	11.90	4.03	90.3	99.7
1984	152.1	759	13.00	4.26	85.1	91.3
1985E	152.0	762	12.35	3.90	80.7	84.9
<u>Forecast</u>						
1986	153	762	12.35	3.78	78.1	82.2
1987	154	764	12.50	3.68	74.7	78.7
1988	156	767	12.80	3.63	73.3	77.2
1989	158	770	13.25	3.63	74.4	78.4
1990	160	773	13.71	3.65	76.6	80.7
1991	163	776	14.10	3.67	78.3	82.5
1992	166	779	14.65	3.65	82.6	86.8
1993	169	782	15.29	3.63	86.8	91.4
1994	172	785	15.95	3.61	91.4	96.2
1995	175	788	16.66	3.59	96.8	102.0
1996	178	791	17.40	3.57	102.5	107.9
1997	181	794	18.17	3.55	108.8	114.6

* Source: RSPA, Form 41

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GLOSSARY OF TERMS

Air Carrier Operations -- Arrivals and departures performed by air carriers certificated in accordance with FAR Parts 121 and 127.

Air Route Traffic Control Center (ARTCC) -- A facility established to provide air traffic control service to aircraft operating on an IFR flight plan within controlled airspace and principally during the en route phase of flight. When equipment capabilities and controller workload permit, certain advisory/assistance service may be provided to VFR aircraft.

Air Taxi -- An air carrier certificated in accordance with FAR Part 135 and authorized to provide, on demand, public transportation of persons and property by aircraft. Generally operate small aircraft "for hire" for specific trips.

Air Traffic -- Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

Air Traffic Hub -- Air traffic hubs are not airports; they are the cities and Metropolitan Statistical Areas requiring aviation services and may include more than one airport. Communities fall into four classes as determined by each community's percentage of the total enplaned passengers by scheduled air carriers in the 50 United States, the District of Columbia, and other U.S. areas designated by the Federal Aviation Administration.

1. Large: 1.00 percent (3,277,710 passengers and over in CY 1984).
2. Medium: 0.25 percent to 0.999 percent (between 819,428 and 3,277,709 passengers in CY 1984).
3. Small: 0.05 percent to 0.249 percent (between 163,886 and 819,427 passengers in CY 1984).
4. Nonhub: Less than 0.05 percent (under 151,859 passengers in CY 1983)

Air Travel Club -- An operator certificated in accordance with FAR Part 123 to engage in the carriage of members who are qualified for that carriage by payment of an assessment, dues, membership fees, or other similar remittance.

Aircraft Contacted -- Aircraft with which the flight service stations have established radio communications contact. One count is made for each en route landing or departing aircraft contacted by a flight service station, regardless of the number of contacts made with an individual aircraft during the same flight. A flight contacting five FSSs would be counted as five aircraft contacted.

Aircraft Handled -- See IFR AIRCRAFT HANDLED.

Aircraft Operations -- The airborne movement of aircraft in controlled or noncontrolled airport terminal areas, and counts at en route fixes or other points where counts can be made. There are two types of operations: local and itinerant.

1. LOCAL OPERATIONS are performed by aircraft which:
 - (a) operate in the local traffic pattern or within sight of the airport;
 - (b) are known to be departing for, or arriving from flights in local practice areas located within a 20-mile radius of the airport;
 - (c) execute simulated instrument approaches or low passes at the airport.
2. ITINERANT OPERATIONS are all aircraft operations other than local operations.

Airport Advisory Service -- A service provided by flight service stations at airports not served by a control tower. This service provides information to arriving and departing aircraft concerning wind direction/speed, favored runway, altimeter setting, pertinent-known traffic/field conditions, airport taxi routes/traffic patterns, and authorized instrument approach procedures. This information is advisory in nature and does not constitute an ATC clearance.

Airport Traffic Control Tower -- A terminal facility which through the use of air/ground communications, visual signaling, and other devices, provides ATC services to airborne aircraft operating in the vicinity of an airport and to aircraft operating on the movement area.

All-Cargo Carrier -- An air carrier certificated in accordance with FAR Part 121 to provide scheduled air freight, express, and mail transportation over specified routes, as well as the conduct of nonscheduled operations which may include passengers.

Approach Control Facility -- A terminal air traffic control facility providing approach control service.

Approach Control Service -- Air traffic control service provided by an approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, en route aircraft. At some airports not served by an approach control facility, the ARTCC provides limited approach control service.

ARTCC -- See AIR ROUTE TRAFFIC CONTROL CENTER.

ASMS -- See AVAILABLE SEAT MILES.

Available Seat Miles (ASMS) -- The aircraft miles flown in each flight stage multiplied by the number of seats available on that stage for revenue passenger use.

Business Transportation -- Any use of an aircraft not for compensation or hire by an individual for the transportation required by a business in which he is engaged.

Center -- See AIR ROUTE TRAFFIC CONTROL CENTER.

Center Area -- The specified airspace within which an air route traffic control center (ARTCC) provides air traffic control and advisory service.

Center Radar Approach Control (CERAP) -- A combined air route traffic control center (ARTCC) and a terminal approach control facility (TRACON).

CERAP -- See CENTER RADAR APPROACH CONTROL.

Commercial Air Carriers -- An air carrier certificated in accordance with FAR Parts 121 or 127 to conduct scheduled services on specified routes. These air carriers may also provide nonscheduled or charter services as a secondary operation. Four carrier groupings have been designated for statistical and financial data aggregation and analysis.

1. MAJORS: Air carriers with annual operating revenues greater than \$1 billion.
2. NATIONALS: Air carriers with annual operating revenues of between \$100,000 and \$1 billion.
3. LARGE REGIONALS: Air carriers with annual operating revenues of between \$10 million and \$9,999,999.
4. MEDIUM REGIONALS: Air carriers with annual operating revenues of less than \$10 million.

Common IFR Room -- A highly automated terminal radar control facility. It provides terminal radar service in an area encompassing more than one major airport which accommodates instrument flight operations.

Commuter Air Carrier -- An air carrier certificated in accordance with FAR Part 135 which operates aircraft with a maximum of 60 seats, and provides at least five scheduled round trips per week between two or more points, or carries mail.

Commuter/Air Taxi Operations -- Those arrivals and departures performed by air carriers certificated in accordance with FAR Part 135.

Control Tower -- See AIRPORT TRAFFIC CONTROL TOWER.

Domestic Operations -- All air carrier operations having destinations within the 50 United States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.

Executive Transportation -- Any use of an aircraft by a corporation, company or other organization for the purpose of transporting its employees and/or property not for compensation or hire, and employing professional pilots for the operation of the aircraft.

FAA -- Federal Aviation Administration.

Facility -- See AIR TRAFFIC CONTROL FACILITY.

Flight Plan -- Specified information relating to the intended flight of an aircraft that is filed orally or in writing with a flight service station or an air traffic control facility.

Flight Service Station (FSS) -- Air Traffic Service facilities within the National Airspace System which provide preflight pilot briefings and en route communications with IFR flights; assist lost IFR/VFR aircraft; assist aircraft having emergencies; relay ATC clearances, originate, classify, and disseminate Notices to Airmen; broadcast aviation weather and NAS information; receive and close flight plans; monitor radio NAVAIDS; notify search and rescue units of missing VFR aircraft; and operate the national weather teletypewriter systems. In addition, at selected locations, FSSs take weather observations, issue airport advisories, administer airmen written examinations, and advise Customs and Immigration of transborder flights.

Flight Services -- See TOTAL FLIGHT SERVICES.

Foreign Flag Air Carrier -- An air carrier other than a U.S. flag air carrier in international air transportation. "Foreign air carrier" is a more inclusive term than "foreign flag air carrier," presumably including those non-U.S. air carriers operating solely within their own domestic boundaries. In practice, the two terms are used interchangeably.

FSS -- See FLIGHT SERVICE STATION.

General Aviation -- All civil aviation activity except that of air carriers certificated in accordance with FAR Parts 121, 123, 127, and 135. The types of aircraft used in general aviation (GA) activities cover a wide spectrum from corporate multi-engine jet aircraft piloted by professional crews to amateur-built single-engine piston acrobatic planes, balloons, and dirigibles.

General Aviation Operations -- Arrivals and departures of all civil aircraft, except those classified as air carrier and commuter/air taxi.

Hub -- See AIR TRAFFIC HUB.

IFR -- See INSTRUMENT FLIGHT RULES.

IFR Aircraft Handled -- The number of IFR departures multiplied by two, plus the number of IFR overs. This definition assumes that the number of departures (acceptances, extensions and originations of IFR flight plans) is equal to the number of landings (IFR flight plans closed).

IFR Departures -- An IFR departure includes IFR flights that:

1. originated in a Center's area;
2. are extended by the Center; or
3. are accepted by the Center under SOLE EN ROUTE clearance procedures.

IFR Overs -- An IFR flight that originates outside the ARTCC area and passes through the area without landing.

IFSS -- See INTERNATIONAL FLIGHT SERVICE STATION.

International and Territorial Operations -- The operation of aircraft flying between the 50 United States and foreign points, between the 50 United States and U.S. possessions and territories, and between two foreign points. Includes both the combination passenger/cargo and the all-cargo carriers engaged in international and territorial operations.

Instructional Flying -- Any use of aircraft for the purpose of formal instruction with the flight instructor aboard or with the maneuvers on the particular flight(s) specified by the flight instructor.

Instrument Approach -- A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority (FAR Part 91).

Instrument Flight Rules (IFR) -- Rules governing the procedures for conducting instrument flight.

Instrument Operation -- An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal control facility or air route traffic control center.

International Flight Service Station (IFSS) -- A central operations facility in the flight advisory system, manned and equipped to control aeronautical point-to-point telecommunications, and air/ground telecommunications with pilots operating over international territory or waters, providing flight plan following, weather information, search and rescue action, and other flight assistance operations.

Itinerant Operations -- See AIRCRAFT OPERATIONS.

Large Regionals -- See COMMERCIAL AIR CARRIERS.

Local Operations -- See AIRCRAFT OPERATIONS.

Majors -- See COMMERCIAL AIR CARRIERS.

Medium Regionals -- See COMMERCIAL AIR CARRIERS.

Military Operations -- All arrivals and departures performed by aircraft not classified as civil.

Nationals -- See COMMERCIAL AIR CARRIERS.

Personal/Pleasure Flying -- Any use of an aircraft for personal purposes not associated with a business or profession, and not for hire. This includes maintenance of pilot proficiency.

Pilot Briefing -- A service provided by the Flight Service Station to assist pilots in flight planning. Briefing items may include weather information NOTAMS, military activities, flow control information, and other items as requested.

Radar Air Traffic Control Facility (RATCF) -- An air traffic control facility, located at a U.S. Navy (USN) or Marine Corps (USMC) Air Station, utilizing surveillance and, normally, precision approach radar and air/ground communication equipment to provide approach control services to aircraft arriving, departing, and transiting the airspace controlled by the facility. The facility may be operated by the FAA, the USN and the FAA, the USN, or the USMC. Service may be provided to both civil and military airports.

Radar Approach Control (RAPCON) -- An air traffic control facility, located at a U.S. Air Force (USAF) Base, utilizing surveillance and, normally, precision approach radar and air/ground communication equipment to provide approach control services to aircraft arriving, departing, and transiting the airspace controlled by the facility. The facility may be operated by the FAA, or the USAF. Service may be provided to both civil and military airports.

Radio Contacts -- The initial radio call-up to a flight service station by en route aircraft; a complete interchange of information and a termination of the contact.

RAPCON -- See RADAR APPROACH CONTROL.

RARCF -- See RADAR AIR TRAFFIC CONTROL FACILITY.

Registered Active General Aviation Aircraft -- A civil aircraft registered with the FAA that has been flown one or more hours during the previous calendar year. Excluded are aircraft owned and operated in regularly scheduled, nonscheduled, or charter service by commercial air carriers or aircraft in excess of 12,500 pounds maximum gross takeoff weight, and owned and operated by a commercial operator certificated by the FAA to engage in intrastate common carriage.

Revenue Passenger Enplanements -- The total number of passengers boarding aircraft. This includes both originating and connecting passengers.

Revenue Passenger Load Factor -- Revenue passenger-miles as a percent of available seat-miles in revenue passenger services, i.e., the proportion of aircraft seating capacity that is actually sold and utilized.

Revenue Passenger Mile (RPM) -- One revenue passenger transported one mile in revenue service. Revenue passenger-miles are computed by summation of the products of the revenue aircraft miles flown on each inter-airport hop multiplied by the number of revenue passengers carried on that hop.

Revenue Ton Mile (RTM) -- One ton of revenue traffic transported one mile.

RPM -- See REVENUE PASSENGER MILE.

RSPA -- The Research and Special Programs Administration of the U.S. Department of Transportation. This office is responsible for the collection of air carrier traffic and financial data on Form 41 that was formally collected by the Civil Aeronautics Board.

RTM -- See REVENUE TON MILE.

Secondary Airport -- An airport receiving approach control service as a satellite to a primary approach control facility, or one at which control is exercised by the approach control facility under tower en route control procedure.

Supplemental Air Carrier -- An air carrier certificated in accordance with FAR Part 121, and providing nonscheduled or supplemental carriage of passengers or cargo, or both, in air transportation. They are also referred to as nonscheduled or charter air carriers.

Terminal Radar Approach Control (TRACON) -- An FAA traffic control facility using radar and air/ground communications to provide approach control services to aircraft arriving, departing, or transiting the airspace controlled by the facility. Service may be provided to both civil and military airports. A TRACON is similar to a RAPCON (USAF), RATCF (USN), and ARAC (Army).

Total Flight Services -- The sum of flight plans originated and pilot briefs, multiplied by two, plus the number of aircraft contacted. No credit is allowed for airport advisories.

Total Operations -- All arrivals and departures performed by military, general aviation, commuter/air taxi, and air carrier aircraft.

Tower -- See AIRPORT TRAFFIC CONTROL TOWER.

TRACON -- See TERMINAL RADAR APPROACH CONTROL.

U.S. Flag Carrier -- One of a class of air carriers holding a certificate issued by the Department of Transportation, and approved by the President, authorizing the carrier to provide scheduled operations over a specified route between the U.S. (and/or its territories) and one or more foreign countries.

VFR -- See VISUAL FLIGHT RULES.

VFR Tower -- An airport traffic control tower that does not provide approach control service.

Visual Flight Rules (VFR) -- Rules that govern the procedures for conducting flight under visual conditions. The term "VFR" is also used in the U.S. to indicate weather conditions that are equal to or greater than minimum VFR requirements. In addition, it is used by pilots and controllers to indicate type of flight plan.

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APPENDIX A

ACTIVE U.S. COMMERCIAL AIR CARRIERS

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3)	
			Domestic	International
1. Aerial (AG)	F	MR	12-84	8-84
2. Air Atlanta (CC)	S	LR	2-84	
3. AirCal (OC)	S	N	1-79	
4. Air Express	F	MR		4-83
5. Air Hawaii	S	MR	11-85	
6. Airlift (RD)	C	MR	7-84	7-84
7. AirPac (RI)	S	LR	4-84	
8. Air Wisconsin (ZW)	S	N	7-79	
9. Alaska (AS)	S	N	X	
10. All Star (LS)	S	MR	4-83	4-83
11. Aloha (AQ) (4)	S	N	X	6-84
12. American (AA)	S	M	X	X
13. America West (HP)	S	N	8-83	
14. American Trans Air	C	LR	X	X
15. Arrow (JW)	S	LR	11-82	6-83
16. Aspen (AP) (5)	S	LR	1-85	
17. Atlantic Gulf (ZY)	C	MR	9-85	
18. Best (IW)	S	MR	7-82	
19. Braniff (BN) (6)	S	N	3-84	
20. Britt (RU) (7)	S	LR	10-84	
21. Buffalo	C	LR	4-84	4-84
22. Cascade (CZ)	S	LR	1-85	
23. Challenge (CN)	F	MR		8-82
24. Continental (CO)	S	M	X	X
25. Delta (DL)	S	M	X	X
26. Eastern (EA)	S	M	X	X
27. Emerald (OD)	S	LR	7-82	
28. Empire (UR)	S	LR	10-79	
29. Evergreen (JO)	F	LR	X	X
30. Flight International	C	MR	4-84	6-84
31. Florida Express (ZO)	S	LR	1-84	
32. Flying Tiger (FT)	S	M	X	X
33. Frontier (FL)	S	N	X	X
34. Galaxy (GY)	C	MR	10-83	12-83
35. Great American (FD)	C	MR	10-80	

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3)	
			Domestic	International
36. Gulf Air Transport (GA)	C	MR		1-85
37. Hawaiian (HA)	S	N	X	10-84
38. Horizon Air (QX)	S	LR	9-84	
39. Independent Air	S	MR	9-94	9-84
40. Interstate	F	LR	5-85	5-85
41. Jet America (SI)	S	N	1-82	
42. Jet Charter	C	MR	7-82	7-82
43. Jet East	C	MR	1-85	
44. Jet Fleet (JL)	C	MR	6-83	
45. Key	C	LR	6-84	1-85
46. Markair (BF) (8)	S	LR	X	
47. Midway (ML)	S	N	11-79	
48. Mid Pacific (HO)	S	LR	9-85	
49. Midwest Express (YX)	S	LR	7-84	
50. Muse (MA)	S	LR	8-81	
51. New Wien (WC)	S	MR	9-85	
52. New York Air (NY)	S	N	12-80	
53. Northeastern (QS)	S	LR	7-84	
54. Northern Air Cargo (HU)	F	LR	12-82	
55. Northwest (NW)	S	M	X	X
56. Overseas (OV)	C	LR	10-82	
57. Ozark (OZ)	S	N	X	
58. Pacific Interstate (QT)	S	LR	12-84	
59. Pacific Southwest (PS)	S	N	1-79	
60. Pan American (PA)	S	M	X	X
61. People Express (PE)	S	N	5-81	5-83
62. Piedmont (PI)	S	M	X	
63. Pilgram (PM)	S	LR	9-85	
64. Ports of Call Travel Club	C	LR	9-85	
65. Presidential Air (XV)	S	LR	10-85	
66. Pride Air (NI)	S	LR	10-85	
67. Reeve (RV)	S	LR	X	
68. Regent Air	S	MR		
69. Republic (RC)	S	M	X	
70. Rich (XR)	C	MR	1-82	
71. Rosenbalm	F	MR	4-85	4/85
72. Ryan	C	LR	4-84	4-84
73. Samoa (MB)	S	MR		2-85
74. Skybus (FW)	S	MR	7-85	
75. Skystar	C	MR	1-85	3-85

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3)	
			Domestic	International
76. Southern Air	F	LR	5-80	4-80
77. South Pacific Island (HK)	S	LR		7-81
78. Southwest (WN)	S	N	2-79	
79. Sun Country (SC)	C	MR	1-83	3-83
80. Sunworld (JK)	S	LR	5-83	
81. Total Air (TA)	C	MR	10-84	5-85
82. Tower (FF)	S	LR		11-83
83. Trans Air-Link	F	MR	1-84	1-84
84. Transamerica (TV)	S	N		5-79
85. Trans International	F	MR	5-85	1-85
86. Trans World (TW)	S	M	X	X
87. United (UA)	S	M	X	4-83
88. US Air (AL)	S	M	X	
89. Western (WA)	S	M	X	X
90. World (WO)	S	N	7-80	5-81
91. Worldwide	C	MR	10-84	10-84
92. Zantop	F	LR	X	X

(1) S = Scheduled; C = Charter; F = All-Cargo.

(2) M = Majors; N = Nationals; LR = Large Regionals; MR = Medium Regionals.

(3) Date of first reported traffic is indicated for those carriers starting service since the passage of the Airline Deregulation Act of 1978. Traffic reported by those carriers certificated prior to deregulation indicated by an X.

(4) Discontinued international service 1/85.

(5) Carrier reported as a commuter air carrier from 9/82 to 12/84.

(6) Carrier did not operate from 5/82 to 2/84.

(7) Carrier reported as a commuter air carrier from 9/81 to 9/84.

(8) Formerly Alaska International.

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APPENDIX B

CARRIERS NO LONGER INCLUDED IN AIR CARRIER FORECASTS

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3)		Date of Last Reported Traffic (4)
			Domestic	Int'l.	
1. Aeromech (KC)	S	MR	7-79		5-81**
2. Air Florida (QH)	S	N	1-79	7-80	5-84*
3. Air Illinois (UX)	S	LR	1-83		2-84*
4. Air National (AH)	C	LR		4-84	6-84*
5. Air Nevada (LW)	S	MR	4-81		7-82**
6. Airmark	C	MR	8-84	9-84	12-84*
7. Air Midwest (ZV)	S	LR	X		12-84**
8. Air New England (NE)	S	MR	X		10-81*
9. Air North (NO)	S	MR	6-80		8-82**
10. Air North/Nenana (XG)	S	MR	3-81		8-82**
11. Air One (CB)	S	LR	4-83		7-84*
12. Altair (AK)	S	MR	1-79		9-82*
13. American Int'l. (AV)	S	LR	11-82		9-84*
14. Apollo (ID)	S	MR	5-79		7-81**
15. Arista (RI)	C	MR	12-82	8-82	3-84*
16. Big Sky (GQ)	S	MR	6-79		9-82**
17. Blue Bell (BB)	C	MR	6-83		2-84*
18. Capitol (CL)	S	N	7-80	7-81	9-84*
19. Cochise (DP)	S	MR	1-79		12-81*
20. Coleman (CH)	S	MR	9-79		3-80*
21. Colgan (CJ)	S	MR	4-81		3-83**
22. Frontier Horizon (FK)	S	LR	1-84		1-85*
23. Global (GL)	C	LR	X	X	12-84*
24. Golden Gate (GG)	S	MR	5-80		7-81*
25. Golden West (GW)	S	MR	2-79		7-82**
26. Guy America (HX)	S	MR		8-81	2-83*
27. Hawaii Express (LP)	S	LR	10-82		10-83*
28. Imperial (II)	S	MR	1-80		6-82**
29. Int'l. Air Service (IE)	C	LR	11-83		5-85*
30. Kodiak (KO)	S	MR	X		11-82**

Air Carrier	Carrier Type (1)	Carrier Grouping (2)	Date of First Reported Traffic (3)		Date of Last Reported Traffic (4)
			Domestic	Int'l.	
31. L.A.B. (JF)	S	MR	1-82		8-82**
32. Mid-South (VL)	S	MR	6-80		2-84*
33. Midstate (IU)	S	MR	7-81		7-82**
34. Midway Express	S	LR	10-84		7-85*
35. Mississippi Valley (XV)	S	MR	4-79		8-82**
36. Munz (XY)	S	MR	X		8-83*
37. New Air (NC)	S	MR	5-79		9-82**
38. Pacific East (PR)	S	LR	9-82		3-84*
39. Pacific Express (VB)	S	LR	2-82		10-83*
40. Peninsula (KS)	S	MR	1-82		1-83**
41. Rocky Mountain (JC)	S	MR	7-81		9-82**
42. Royale (OQ)	S	LR	3-84		6-84**
43. Sea Airmotive (KJ)	S	MR	1-80		6-82**
44. Sky West (QG)	S	MR	7-79		12-84**
45. Southeast (NS)	S	MR	7-79		1-80*
46. Swift Aire (WI)	S	MR	1-79		7-81*
47. T-Bird (DQ)	C	MR		4-82	8-84*
48. Wien (WC)	S	N	X		11-84*
49. Western Yukon (WX)	S	MR	7-81		6-82*
50. Wright (FW)	S	MR	X		11-82**

(1) S = Scheduled; C = Charter; F = All-Cargo.

(2) M = Majors; N = Nationals; LR = Large Regionals; MR = Medium Regionals.

(3) Date of first reported traffic is indicated for those carriers starting service since the passage of the Airline Deregulation Act of 1978. Traffic reported by those carriers certificated prior to deregulation indicated by an X.

(4) Date of last reported traffic is indicated. Carriers that have discontinued scheduled passenger service indicated by an *. Carriers now filing RSPA Form 298-C in lieu of RSPA Form 41 indicated by **.